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at his house in Nicholson St., Dr. John Murray — June 22. 1825. The death of this distinguished Philosopher, snatched from us in the prime of life, and full vigour of his faculties, will long be felt as a national loss. His works now of standard cele-brity at home and abroad, have, from the spirit of profound & accurate analysis, which they every display; and from the force, clearness, and precision of their statements, most essentially contributed to the advance of Chemistry to the high rank which it now holds amongst the liberal Sciences. As a lecturer on Chemistry it is impossible to praise too highly the superior talents of Dr Murray; always perfectly master of his subject & successful in his experiments, which were selected with great judgment, his manner had a natural ease & animation, which shewed evidently that his mind went along with every thing he attended & gave his lectures great freedom & animation.

Edward Snidel

Jany. 1824

# ELEMENTS

OF

# MATERIA MEDICA

AND

# PHARMACY.

MEDICAL SOCIETY OF LONDON
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# ELEMENTS

OF

# MATERIA MEDICA

AND

# PHARMACY:

BY

J. MURRAY,

LECTURER ON CHEMISTRY, AND ON MATERIA MEDICA
AND PHARMACY.

*IN TWO VOLUMES.*

VOL. I.

EDINBURGH,
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1804.

Hil

TO

JAMES HOME, M.D.

PROFESSOR OF MATERIA MEDICA

IN THE

UNIVERSITY OF EDINBURGH,

THIS WORK IS INSCRIBED,

WITH

SENTIMENTS OF THE HIGHEST RESPECT,

BY

THE AUTHOR.

# PREFACE.

IN compoſing the following Work, the object which I principally had in view was to render more uſeful the Lectures I deliver, on the ſubjects of which it treats. I could not doubt of the advantages to be derived from an Outline which preſents to the ſtudent the general arrangement of the Courſe, and a ſummary of the leading facts and principles which it is deſigned to illuſtrate. And I deemed this the more neceſſary, as the claſſification of the Materia Medica which I have adopted, and ſome of the views of the operations of medicines, are different from thoſe which have hitherto been propoſed.

I was ſtill farther induced to engage in a taſk of this kind, from there being no work on Materia Medica or Pharmacy, to which I could refer, as adapted to convey juſt ideas on theſe branches of medicine in their preſent ſtate. With the exception of the new and valuable edition of the *Edinburgh Diſpenſatory* by Dr DUNCAN *junior*, (publiſhed ſince the greater part of this treatiſe was written), there is no elementary work on Pharmacy, in which the diſcoveries of Modern Chemiſtry are introduced: and former ſyſtems of Materia Medica, whatever may have been their merits, have in ſome meaſure become obſolete and deficient, in conſequence of the changes that have taken place, within theſe twenty years, in the theory and practice of medicine, and in the ſciences with which it is connected.

The ſame reaſons ſuggeſted the propriety of extending the plan of the work farther than that merely of a Syllabus or Text-Book. I have accordingly adopted one more comprehenſive, and have endeavoured to preſent ſuch a view of the Principles and Facts of Materia Medica, and Pharmacy, as may be uſeful, independent of the Lectures to which it is related.

The firſt part of this Synopſis is allotted to the General Principles of PHARMACEUTIC CHEMISTRY. For this I might perhaps have referred to the Elements of Chemiſtry, which I formerly publiſhed. It ſeemed preferable, however, to render the preſent treatiſe complete in itſelf, ſo far as the plan extended; and by prefixing ſuch a ſummary, an opportunity was afforded of conveying ſome general obſervations, more immediately connected with Pharmacy.

MATERIA MEDICA forms the ſecond diviſion of the work. In this, I have adopted-ed that arrangement which, after mature deliberation, appears to me preferable to any other,—that of claſſing the different ſubſtances according to their medicinal powers. I have endeavoured to eſtabliſh a comprehenſive claſſification of this kind, and, under each claſs, to explain the general operation and practical applications of the ſubſtances belonging to it. The plan followed with regard to each article, is, to give its natural hiſtory, deſcribe its ſenſible properties, its chemical analyſis and pharmaceutic treatment, and enumerate its uſes in the treatment of diſeaſes, with its doſe, modes of adminiſtration, and officinal preparations. In the ſelection of the articles, I have been careful to exclude ſuch as have been diſcarded from modern practice, and which an undue regard to antiquity has too long retained in publications on Materia Medica.

The third part is devoted to PHARMACY. The *Pharmacopœia* of the *Edinburgh College* affording a ſelection of Pharmaceutical Preparations, ſuperior, perhaps, to any other, and uſing likewiſe the eſtabliſhed language of chemiſtry and natural hiſtory, has been adopted as the baſis of this part of the work. To a tranſlation of its proceſſes, I have added, under each preparation, its medicinal uſes and doſe, with the theory of the proceſs, where this was requiſite. The correſponding preparations of the *London Pharmacopœia* are likewiſe noticed, as well as a few which, though not inſerted in either Pharmacopœia, are occaſionally uſed in practice.

As there are ſome peculiarities with regard to the modes of preparing and adminiſtering the Gaſes, I have not placed thoſe of them which may be medicinally employed, under their appropriate claſſes in the Materia Medica, but have thrown them into an Appendix, to which alſo, for a ſimilar reaſon, I have referred the conſideration of Electricity and Galvaniſm as medicinal agents. Laſtly, as connected with the ſubjects of theſe volumes, I have ſubjoined the Heads of a Lecture which I have been accuſtomed to deliver on Extemporaneous Preſcriptions.

J. MURRAY.

EDINBURGH,
Jan. 20. 1804.

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INTRO-

# INTRODUCTION.

MATERIA MEDICA, underſtood according to the ſtrict definition of the term, is that department of the Science of Medicine which relates to the knowledge of remedies, or of the effects produced in the human ſyſtem by ſuch ſubſtances as are employed for the removal of diſeaſe. The OBJECTS to be attended to in its ſtudy are the Natural Hiſtory, the Chemical Compoſition and Properties, and the Medicinal Powers and Applications of the Subſtances which belong to it.

The NATURAL HISTORY of theſe ſubſtances is of utility in furniſhing appropriate characters by which they may be diſtinguiſhed. Many of them bear a cloſe reſemblance to each other, and can only be diſcriminated by thoſe minute and accurate diſtinctions which the methods of natural hiſtory afford.

From the intimate connection which frequently ſubſiſts between thoſe properties on which natural claſſification is eſtabliſhed, and the various qualities with which bodies are endowed, natural hiſtory is likewiſe, to a certain extent, capable of affording indications of the virtues of remedies. Thus, in the vegetable kingdom, the different ſpecies of the ſame genus, and even the different genera of the ſame natural order, are compoſed of ſubſtances which frequently exert the ſame actions on the living ſyſtem; yet to this connection there are exceptions ſo numerous and important, that it is incapable of juſt application to any conſiderable extent; it can only ſuggeſt conjectures, which require to be brought to the teſt of experiment.

The more full deſcription of the ſenſible properties of the articles of the Materia Medica, affords the moſt obvious method of diſtinguiſhing them, and in many caſes the eaſieſt and moſt certain criterion of their purity and perfection.

It has likewiſe been imagined, that the ſenſible qualities of medicines afford indications of their peculiar powers. Thoſe, for example, which are inodorous and inſipid, are ſeldom active remedies; and thoſe which have a ſimilarity in taſte or in flavour, have alſo a general reſemblance in their virtues. But though indications of this kind may be partially true, they are extremely limited in their application, and are liable to many cauſes of obſcurity and error.

The Chemical History of the articles of the Materia Medica, embraces ſeveral important ſubjects of inquiry.

Their analyſis, eſpecially that of thoſe belonging to the vegetable kingdom, has been ſuppoſed capable of leading to a knowledge of their virtues; and the opinion does not *à priori* appear improbable, ſince the medicinal powers of any compound body, in common with its other internal properties, muſt ariſe from its peculiar compoſition. Without any reference, however, to the very imperfect analyſes of the older chemiſts, it may be remarked, that even from the reſearches of modern chemiſtry little information of this kind can be acquired. It may be diſcovered, indeed, in what proximate principle of any vegetable ſubſtance its virtues reſide; but this affords no previous indication of theſe virtues. Nor can the analyſis of theſe principles explain the ſource of the powers which are attached to them in particular ſubſtances; the peculiarities of compoſition from which theſe may originate, being by far too ſubtle to be detected by chemical means.

Chemiſtry, however, is in other reſpects more directly uſeful in its application to the Materia Medica. It enables us, by the uſe of proper ſolvents, or by the due application of heat, to ſeparate thoſe proximate principles of vegetables in which their virtues reſide, from other inert or noxious matter with which they may be mixed; it aſcertains how far theſe proceſſes are uſeful, points out thoſe changes in compoſition by which the virtues of the ſubſtances acted on are frequently altered, and the means by which ſuch injuries may be leſſened or prevented. Similar advantages are obtained from its application to the few products of the animal kingdom that are uſed in medicine. Thoſe which are derived from the mineral kingdom, can be employed with advantage and diſcrimination only when their compoſition is known; and the analyſes of theſe ſubſtances have exploded many errors reſpecting them, have enabled us to diſtinguiſh them from each other, have pointed out the identity of others, and have rectified the proceſſes by which they are prepared.

By new combinations, Chemiſtry furniſhes us with many remedies equally active and important with thoſe afforded by nature; and by pointing out the mutual chemical actions of different ſubſtances, it guards againſt the errors which might ariſe from improper mixtures.

The laſt object in the ſtudy of the Materia Medica, that to which the others are merely ſubſervient, is the Medical History of its articles,—the inveſtigation of their virtues, or their practical uſes in the treatment of diſeaſe.

This includes, in the firſt place, the conſideration of the actions of theſe ſubſtances on the ſyſtem, in general, as, this being aſcertained, leads to their application to the treatment of morbid affections.

It is likewiſe neceſſary to inveſtigate, ſo far as it can be done, the *mode* in which remedies act, either in the healthy or in the diſeaſed ſtate, and by which they produce their peculiar effects. We are thus better enabled to diverſify their application, to determine the caſes to which each may be more peculiarly adapted, and to diſcover the various circumſtances by which their operations are influenced.

In conſidering the practical uſes or applications of remedies, the objects demanding attention are the various kinds and forms of diſeaſe to which they are adapted, the circumſtances that may render their exhibition improper in particular caſes, the cautions neceſſary in their uſe, their doſes, together with their uſual and proper modes of adminiſtration, and the effects of their combinations with each other.

PHARMACY is the art of Preſerving, Preparing, and Compounding Medicines.

The PRESERVATION of Medicines is its leaſt extenſive part. It includes principally the general rules for collecting plants at certain ſeaſons, or in particular ſtates of maturity, and thoſe by which they are dried or preſerved from the injuries they would ſuſtain by expoſure to light, air, and moiſture. It comprehends, in like manner, rules for the collection and preſervation of animal and mineral ſubſtances.

That part of Pharmacy termed the PREPARATION of Medicines, includes a variety of important operations.

The virtues of thoſe remedies which are derived from the vegetable kingdom, generally depend on one or other of the proximate principles of each ſubſtance; on its gum, its reſin, eſſential oil, or ſome other. Theſe different principles are diſſolved by different agents, by water, alkohol, &c.; and as they are often, as they exiſt in the entire vegetable, mixed with much inert matter, it is of advantage to extract the active principle by means of its proper ſolvent, and to exhibit it in its pure and concentrated ſtate. Hence have ariſen the various pharmaceutic preparations of infuſions, decoctions, tinctures, extracts, &c. theſe being all proceſſes by which the active matter of any ſubſtance is ſeparated from the inert matter with which it is naturally mixed, and differing from each other only in the ſolvent employed, or in the form to which the ſolution is reduced.

Sometimes, alſo, the principles of theſe ſubſtances are extracted by other means, as when an unctuous oil is obtained by expreſſion, or an eſſential oil by the application of heat. This oil may alſo be combined with water or alkohol, and thus diſtilled waters or ſpirits are formed.

By ſuch proceſſes, we extract only a principle previouſly exiſting in any particular ſubſtance; we form no new remedy, but merely obtain the ſame virtue in a different form. In other caſes, Pharmacy produces remedies altogether new. Theſe are always the reſult of chemical action; they are either compounds, produced by the combination of two or more chemical agents, or they are the products of chemical decompoſition. In this manner are obtained the various ſaline and metallic preparations. Theſe preparations, too, are often diſſolved in various fluids, in order that they may be conveniently exhibited; proceſſes analogous to the infuſions or tinctures of vegetable ſubſtances.

Composition is the laſt part of Pharmacy. In this no chemical combination is effected; but different medicines are merely mixed together, with the intentions of promoting their efficacy, of correcting their operation, of covering their taſte or flavour, or of giving them a commodious form.

From this view of the objects of Pharmacy, it is evident, that it is principally a particular application of Chemiſtry. Its operations are either directly chemical, or require that the chemical properties of the bodies operated on ſhould be accurately known.

# PART I.

## GENERAL PRINCIPLES OF PHARMACEUTIC CHEMISTRY.

PHARMACEUTIC CHEMISTRY is that department of chemical ſcience which inveſtigates the compoſition and chemical relations of bodies with a view to their medicinal properties, and explains thoſe operations by which they are fitted to act with more efficacy or ſafety as remedies againſt diſeaſe. It includes thoſe facts and principles which connect Materia Medica and Pharmacy, the enumeration of which forms the proper introduction to the ſtudy of theſe two branches of medicine.

## SECT. I.—PHARMACEUTICAL OPERATIONS.

THE phenomena which it is the object of Chemiſtry to inveſtigate, and upon which, therefore, the principal operations of pharmacy depend, ariſe principally from the exertion of that power poſſeſſed by the particles of different kinds of matter, by which they have a tendency to combine together. When two different bodies are placed in contact, under certain circumſtances, they unite, and form one homogeneous ſubſtance, in which the particles of either can no longer be diſcovered. The power whence this combination proceeds, is termed Chemical Attraction or Affinity. It is exerted only between the *minute particles* of *different* kinds of matter, and between theſe only at inſenſible diſtances. The ſubſtances which it combines never ſeparate ſpontaneouſly, nor are they capable of being ſeparated by any mechanical means; and they form a compound poſſeſſing properties more or leſs different from thoſe of its component parts.

The change of properties from combination is the moſt remarkable phenomenon attending the exertion of chemical attraction. The ſenſible qualities, and chemical properties of the compound, bear in general no reſemblance to theſe qualities and properties in the ſubſtances of which it is formed. This, however, is not invariably true. There are a number of inſtances, eſpecially in Pharmacy, where the change is much leſs complete, as in the ſolutions of reſins or eſſential oils in alkohol, or of gums or ſaline ſubſtances in water. But in theſe the marks of chemical combination are ſtill preſent, the compound is homogeneous, and cannot be decompoſed but by the exertion of a ſuperior affinity.

Chemical attraction is not invariably or equally exerted by each ſubſtance to every other. Between many ſubſtances there ſeems to exiſt no attraction, at leaſt they cannot be made to combine together. Others have a very extenſive power of combination, and ſeem capable of uniting with almoſt every ſubſtance which is not already ſaturated with them; and there are many intermediate, in their facility of combination, between theſe two extremes.

Chemical attraction is not limited, in its action, to two bodies. It can be exerted between three, four, or more, and can thus form compounds of ſo many principles. It can likewiſe unite bodies in different proportions. Some combine in every proportion, others only in limited quantities. In the latter caſe, the compounds formed by the different proportions have in general very different properties.

The compounds which are thus formed, have ſtill the ſame relation to chemical attraction. They have a tendency to combine with other bodies, ſimple or compound ; they can combine in various numbers and proportions ; and theſe combinations are accompanied by the ſame phenomena, and regulated by the ſame laws.

The attraction exerted by any ſubſtance towards others, is not uniform in its force. To ſome it is ſtronger, to others weaker. Hence it follows, that if two bodies have been combined together, they may be ſeparated, or the compound they have formed may be deſtroyed, by preſenting to it another ſubſtance, which exerts an attraction to one of its component parts, ſuperior to the attraction by which they were held united. If the circumſtances neceſſary to favour the exertion of chemical attraction be preſent, the two bodies between which there is the ſtrongeſt attraction combine, and the other is ſeparated. In chemical language this proceſs is termed Decompoſition, from a ſingle elective attraction.

A caſe of decompoſition, more complicated, is that, where two compounds are mixed together, and where the conſtituent parts of the one exert attractions to thoſe of the other ſtronger than the attractions by which they are held combined in the original compounds. In this caſe, a complete exchange takes place, and two new compounds are formed. This is termed Double Decompoſition, or the exertion of a double elective attraction. Tables have been conſtructed of the relative forces of attractions of many bodies towards others, whence may be eſtimated the combinations or decompoſitions that will take place on their mixture with each other.

The exertion of chemical attraction between bodies is greatly influenced by another power, that of heat or Caloric. This is the cauſe of the temperature of bodies, of their expanſion, fluidity, and converſion into the aëriform or gaſeous ſtate. Its influence on chemical combination and decompoſition is very extenſive. Some bodies combine together at the common temperature of the atmoſphere; others require that temperature to be raiſed; and in ſome it is neceſſary to expoſe them to a very intenſe heat. The ſame differences take place with reſpect to decompoſition. Many bodies remain in chemical union within a certain range of temperature, more or leſs extenſive; but whenever the heat, to which the compounds in which they exiſt are expoſed, is increaſed beyond a certain degree, decompoſition takes place, and the conſtituent principles are ſeparated from each other. Theſe effects are partly to be explained from the power caloric has of weakening the force of aggregation in bodies by which their particles are held in union, and by which that power tending to ſeparate them, in order to bring them into a ſtate of new combination, is counteracted;

and partly from the ſtate of expanſion or of fluidity produced by caloric, by which the ſurfaces between which chemical attraction is exerted are increaſed, and the minute particles of bodies are brought to act upon each other.

The OPERATIONS OF PHARMACEUTIC CHEMISTRY are entirely dependent on chemical attraction, or on the action of caloric. They are merely particular arrangements of circumſtances, by which the exertion of that attraction is promoted, and the products of the combinations or decompoſitions which take place are obtained.

There are ſeveral preliminary operations, not directly chemical, but employed either to favour the exertion of chemical attraction, or to facilitate the medicinal operation of the ſubſtances ſubjected to them. They are thoſe operations, by which bodies are reduced to a ſtate of extreme mechanical diviſion. The principal are PULVERIZATION, or reducing bodies to powder by beating; TRITURATION, in which the ſame effect is obtained by rubbing; and LEVIGATION, in which the powder is reduced to a great degree of fineneſs, from the rubbing being continued longer, and being facilitated by the addition of any fluid which does not act chemically on the ſubſtance ſubjected to the operation. Theſe are performed in mortars of glaſs, earthen-ware, or metal. As the particles into which the ſubſtance is reduced by any of theſe means, muſt neceſſarily be of unequal fineneſs, the coarſer are ſeparated from the finer, by SIFTING or paſſing the powder over a ſieve. WASHING or ELUTRIATION is an operation in which the ſame end is attained. The powder is agitated in a fluid, in which it is not ſoluble; the larger particles are allowed to ſubſide; the liquor, holding the finer ſuſpended, is poured off; and, on it remaining at reſt, are depoſited. Theſe methods can be applied to few of the metals with advantage. They are, therefore, mechanically divided, by filing, by beating into fine leaves, or by pouring them when melted into water; an operation termed Granulation, as the metal becomes ſolid, in the form of ſmall grains.

Theſe operations do not directly promote chemical action; as they are far from reducing bodies to their minute particles, between which that action is exerted: they are merely employed as preliminary to thoſe which are more directly chemical. In pharmacy, ſome of them are of utility, beſides promoting chemical combination, as there are ſeveral medicines which act with more certainty and power when finely levigated, than when given in a coarſer powder.

Of the *CHEMICAL OPERATIONS*, the moſt important are thoſe by which that fluidity is obtained, which is in general requiſite for the exertion of chemical attraction. *SOLUTION* is the principal operation of this kind. It is that proceſs in which a ſolid body, when immerſed in a fluid, diſappears; ſo that its particles are no longer diſcoverable, and upon ſtanding do not ſubſide, the fluid likewiſe retaining its uſual tranſparency. It is merely an example of chemical combination between two bodies, which happen to exiſt in different forms, the compound remaining in the fluid ſtate. The fluid being conceived to be the more active ſubſtance, has been termed the Solvent, the ſolid the Solvend or body diſſolved. The attraction, however, whence the ſolution proceeds, is reciprocal, and is not more exerted by the one than by the other.

The previous mechanical diviſion of ſolids, promotes their ſolution, by enlarging the ſurface between which the mutual attraction is exerted. Agitation cauſes the ſolution to proceed more rapidly, by bringing ſucceſſively the different parts of the fluid into contact with the ſolid.

There are, in general, certain limits to the ſolution of ſolids in fluids. A certain quantity of ſea-ſalt, for example, may be diſſolved in a given quantity of water; but if more be added, it remains undiſſolved, and can only be diffuſed through the ſolution. When the fluid has taken up as much of the ſolid as it can diſſolve, it is ſaid to be *ſaturated* with it. The ſame fluid requires for its ſaturation very different quantities of ſolids; of ſome it can diſſolve only a very ſmall portion, of others more than its own weight. The ſaturation of a fluid with one ſubſtance, does not prevent it from diſſolving a portion of a ſecond, or even of a third or fourth, though it leſſens the ſolvent power with regard to each. There are ſome caſes in which the ſolvent power is apparently unlimited, or in which no preciſe point of ſaturation can be pointed out, ſuch as the ſolution of ſugar, gums, &c. in water.

The temperature or degree of heat has a very important influence on ſolution, and in varying the point of ſaturation. In general every ſolution proceeds with more facility or rapidity at a high than at a low temperature, and the fluid is even capable at the high temperature of diſſolving a larger portion of the ſolid, though with reſpect to different ſolids, this increaſe of ſolvent power, by a given temperature, is very different.

Solution, beſides being one of the moſt important operations in chemical analyſis, is one of the moſt uſeful in pharmacy, the active principles of many ſubſtances being extracted, by means of their proper ſolvents. Saline ſubſtances are diſſolved in water, as are alſo gum, ſugar, and other vegetable and animal products. Reſins, camphor, eſſential oils, &c. are diſſolved in ether, alkohol, or wine; and metals are rendered ſoluble and active by the different acids. The operation receives different appellations, according to the nature of the ſolvent, of the ſubſtances diſſolved, and of the manner in which it is performed. When we have a mixture of ſaline or earthy ſubſtances, of which part is ſoluble in water, or in any other fluid, while another part is inſoluble, the one may be ſeparated from the other by the due application of its proper ſolvent. The proceſs thus performed is termed LIXIVIATION, and the ſolution obtained, a LEY. When a fluid is poured on any vegetable or animal ſubſtance, ſo as to diſſolve only part of its principles, the operation is termed EXTRACTION, and the part diſſolved is ſaid to be extracted. If it is performed without the aſſiſtance of heat, it is termed MACERATION; if with a moderate heat, DIGESTION; if the fluid be poured boiling hot on the ſubſtance, and they are kept in a covered veſſel till cold, it forms INFUSION. Laſtly, DECOCTION is the term given to the operation where the fluid is *boiled* upon the ſubſtance to be diſſolved.

To obtain the ſolid matter which has been diſſolved in any fluid, the proceſs named EVAPORATION is employed. The liquor is expoſed to heat in a veſſel of ſuch a form as to preſent a wide ſurface to the atmoſphere; the fluid is converted into vapour, and the matter that had been diſſolved is thus obtained in a ſolid ſtate. The heat employed in evaporation ſhould always be as moderate as poſſible, as the flavour of the ſolid reſiduum is otherwiſe apt to be injured, its compoſition changed, or part of it carried off with the vapour. In many caſes, the heat afforded by placing the veſſel containing the fluid to be evaporated over boiling water is ſufficient. This forms the *Water Bath* or *Balneum Mariæ.*

There are many ſubſtances, eſpecially thoſe belonging to the claſs of Salts, which, when their ſolutions are evaporated to a certain extent, concrete in maſſes of regular forms, hard and tranſparent. Theſe are termed *Cryſtals*, and the operation itſelf CRYSTALLIZATION. The firſt ſtep in this proceſs is to evaporate part of the fluid till the ſolution while at its boiling point is ſaturated, or retains in ſolution the largeſt quantity of the body which at that temperature it can hold diſſolved. On allowing it to cool, the portion which the high temperature enabled the fluid to hold in ſolution, will ſeparate, and cryſtals will be formed; and by ſucceſſive evaporations, the whole of the ſolid matter may be obtained in the cryſtalline form. In like manner, cryſtals are formed by the ſlow or ſpontaneous evaporation which takes place when a fluid is expoſed to the atmoſphere, and theſe being formed more ſlowly, are even harder and more perfect in their figure than thoſe obtained by haſty evaporation.

In cryſtallizing, the figure which the body aſſumes, is regular and peculiar to itſelf, and hence is eſtabliſhed the arrangement of cryſtals into priſmatic, rhomboidal, and other forms; theſe, however, are frequently varied by external circumſtances.

Water is eſſential to the formation of cryſtals, and gives them their tranſparency. The cryſtals of different bodies contain very different quantities of this fluid. It is termed their Water of Cryſtallization; and by whatever means it is expelled, the tranſparency, denſity, and figure of the cryſtal is loſt. If cryſtals loſe their water of cryſtallization on expoſure to the air, they are ſaid to *effloreſce;* if, on the contrary, water is abſorbed, ſo that the ſubſtance becomes moiſt or fluid, it is ſaid to *deliqueſce.*

Cryſtallization is promoted by the acceſs of the atmoſpheric air to the fluid, and by affording a nucleus or ſolid point at which the cryſtallization may commence. Some ſubſtances have ſo ſtrong an attraction to the fluid in which they are diſſolved, that they do not ſeparate in the cryſtalline form, even when the ſolution has been conſiderably evaporated. They either remain diſſolved, forming a liquor more or leſs glutinous; or if the evaporation be carried to a greater extent, they are recovered in the ſolid form, but deſtitute of any regular figure. Some of theſe bodies, when diſſolved in water, may be made to cryſtallize by the addition of a ſmall quantity of alkohol, which, by exerting a ſtill ſtronger attraction to the water, weakens their combination with it. Other ſubſtances ſoluble in water, as gum, ſtarch, &c. can by no management be made to undergo this operation.

Beſides this ſpecies of cryſtallization, there is a proceſs of a ſimilar kind to which the ſame term is applied. When a body has been melted, if the fluid has its temperature ſlowly reduced, ſo that it approach gradually to the point at which it becomes ſolid, its particles frequently unite, ſo as to form maſſes of regular figures, or cryſtals. This ſpecies of cryſtallization is not however, applied to any pharmaceutical purpoſe.

Precipitation is another proceſs by which a ſolid body is ſeparated from a fluid. If, for example, to the ſolution of any ſolid matter in any fluid, a ſubſtance be added, which has a ſtronger attraction to the fluid than the ſolid previouſly diſſolved in it has, the latter will be ſeparated, and will be thrown down in its ſolid form. In like manner, precipitation may take place from the ſubſtance which is added combining not with the fluid, but with the ſolid diſſolved, and forming with it a new compound no longer ſoluble. The proceſs, in either caſe, is termed *Precipitation*, the ſubſtance thrown down is a *Precipitate*, and the ſubſtance by which the precipitation has been effected, is the *Precipitant.*

In order to obtain a precipitate pure, it is allowed to ſubſide; the clear liquor is poured off, the precipitate is repeatedly waſhed, to carry off any of the ſubſtance by which it was precipitated, which may ſtill adhere to it; it is then dried.

The preceding operations are thoſe in which a ſolid body diſſolved in a fluid is recovered by abſtracting part of the fluid. But there are many caſes of combination, or decompoſition, in which our object is rather to obtain the more volatile part of the mixture. In ſuch caſes *Diſtillation* and *Sublimation* are had recourſe to.

In DISTILLATION, the materials are expoſed to a proper degree of heat, in veſſels contrived ſo as to collect the part which paſſes off in vapour, condenſe it, and thus obtain it in the fluid form. Diſtillation is therefore nothing but evaporation in cloſe veſſels, with the deſign of obtaining the volatile products.

In many caſes of diſtillation, the matter to be diſtilled is apt to be injured by the application of too ſtrong a heat; ſuch, for example, is the caſe with regard to the eſſential oils of plants. To prevent this, they are not expoſed alone to heat, but with the addition of a quantity of water. The temperature at which water is converted into vapour, (212° of Fahrenheit) is ſufficient to volatilize theſe oils, without injuring them. The oil therefore riſes with the vapour, is condenſed with it, and is eaſily ſeparated from the water, by their difference in ſpecific gravity, a ſmall quantity of it only being loſt by being retained by the water in ſolution.

When the ſubſtance to be diſtilled is not of ſuch a nature as to act chemically on metallic veſſels, the common ſtill, made of iron or copper, is employed. This is a cylindrical veſſel, from the head of which a pipe iſſues, which is connected with a ſpiral tube, placed in a veſſel filled with water. The heat is directly applied to the bottom of the ſtill; the vapour produced paſſes off through the tube, and is condenſed in the ſpiral tube (or worm as it is termed), the cold water with which this is ſurrounded promoting the condenſation.

Acids, or other ſubſtances that would act upon metallic veſſels, or receive from them a noxious impregnation, are diſtilled from glaſs veſſels. The Retort, or conical bottle bent nearly at a right angle, is uſed for this purpoſe; the heat being communicated to it by the medium of a ſand-bath. The vapour is condenſed in a conical or globular veſſel, termed a Receiver, connected with the retort. Where the vapour is highly elaſtic or difficult of condenſation, a ſeries of receivers connected together is neceſſary; and where it is incapable of condenſation by itſelf, but is eaſily abſorbed by water, a portion of that fluid is diſpoſed in the receivers, by which it is condenſed. Some bodies are impure on their firſt diſtillation; they are purified by a ſecond diſtillation, which is then termed *Rectification.* Or, with the proper product of the diſtillation, a portion of aqueous vapour may have paſſed over: this may be abſtracted by expoſing the diſtilled fluid again to heat, and the proceſs is named *Concentration* or *Dephlegmation.*

SUBLIMATION is another operation, by which a volatile matter is ſeparated from one more fixed, by the application of heat; but the matter volatilized is again condenſed, not in the fluid but in the ſolid form. The operation, therefore, is generally performed in one veſſel, the ſublimate being condenſed in the upper part. When it concretes, in the form of light flakes, it was termed Flowers, in the old language of pharmacy.

FUSION is, next to ſolution, the principal operation by which chemical combination is promoted. It is adapted to thoſe caſes in which the bodies deſigned to act upon each other are not ſoluble in any fluid, or at leaſt in none that does not alter their attractions. The fluidity neceſſary for their mutual chemical action, is therefore given to them by the due application of heat. The operation is commonly performed in veſſels termed Crucibles, which are cups made of earthen-ware, of black-lead, or of ſome metal; the neceſſary heat being excited and communicated in general by a furnace.

Chemical combination is alſo frequently promoted by the application of heat, even though the bodies are not fuſed. *Calcination* is an operation of this kind. It is merely the expoſing of a metal to a high temperature, with the free acceſs of atmoſpheric air, by which it is oxygenated. *Deflagration* is an operation of a ſimilar kind. It conſiſts in mixing ſome ſalts, eſpecially nitrat of potaſh, in which a large quantity of oxygen is retained with a very weak attractive force, with any inflammable body, and expoſing the mixture to heat. The oxygen is attracted by the inflammable ſubſtance, which is thus oxydated.

Chemical decompoſition is, in like manner, promoted by an increaſe of temperature. One principle of a compound, which is diſpoſed to volatility, may thus be expelled; or two bodies, one or both of which are compounds, and which when mixed together have no action on each other, may, when expoſed to a ſtrong heat, exert attractions, by which their decompoſition is effected.

Theſe are the principal operations of pharmacy. Connected with this branch of the ſubject, there remain to be noticed the meaſures and weights which are uſually employed. *Troy weight* is that ordered to be obſerved in the different Pharmacopœias. The pound is divided into twelve ounces; the ounce into eight drachms; the drachm into three ſcruples; and the ſcruple into twenty grains. Meaſures are rejected by the Edinburgh College, but are admitted in other Pharmacopœias, and uſed by the apothecaries. They are ſubdivided in a ſimilar manner, and are made to anſwer to the ſpecific gravity of water. A table-ſpoonful and tea-ſpoonful, (meaſures frequently employed), are underſtood to be equal, the former to half an ounce, the latter to one drachm.

## SECT. II.—CHEMICAL ANALYSIS OF THE ARTICLES OF THE MATERIA MEDICA.

THE conſideration of the general analyſis of the ſubſtances employed as remedies, muſt neceſſarily precede their particular hiſtory, as it is ſo intimately connected with the obſervations to be made on their properties, the marks of their purity and perfection, their actions on each other, their combinations, and pharmaceutic treatment.

CHEMISTRY arranges all bodies under two claſſes; thoſe which are Simple, and thoſe which are Compound. The former are ſuch as conſiſt merely of ſimilar parts; the latter ſuch as can be reſolved into particles different in their properties from each other, and from the compound which they had formed. From the combinations of a few ſimple ſubſtances, originate all the productions of nature, and all thoſe which are the reſults of the operations of art.

It is the province of chemiſtry to trace theſe combinations, to determine whether bodies are ſimple or compound; and, if compound, to aſcertain the number and proportions of their conſtituent parts, and the modes in which they are combined. Theſe objects are attained by Analyſis and Syntheſis, two general operations, comprehending the greater number of the proceſſes of chemiſtry.

Analyſis is the decompoſition of a compound, or the ſeparation of its conſtituent parts. It is effected, either by expoſing it to heat, when, from the unequal action of the caloric on the particles of which it is compoſed, they are ſeparated from each other; or, by ſubjecting it to the action of a ſuperior attraction, in other words, by preſenting it to ſome ſubſtance which exerts an attraction to one or other of its component parts, ſuperior to the attraction by which theſe were held united.

When the analyſis has been effected, we may often again combine the principles obtained, ſo as to form the compound that has been decompoſed.

poſed. This forms what is termed Syntheſis, which, when it can be effected, is always a proof of the accuracy of the analyſis. Very frequently, however, in the decompoſition of a compound, the principles that are ſeparated, inſtead of paſſing off pure, combine in new modes and proportions, and form compounds, which then become the products of the analyſis. Theſe cannot be combined again, or, if they could, they would form a compound totally different from the ſubſtance originally analyſed. They may, however, be ſubjected to a further analyſis, and thus the ultimate principles of the compound may be accurately aſcertained. The whole of the ſubſtances belonging to the vegetable and animal kingdoms are ſubject to this complicated analyſis.

In analyſing the various products of nature, we ultimately arrive at a few ſubſtances which we are unable farther to decompoſe, and which are therefore regarded as *ſimple.* Their abſolute ſimplicity is not indeed eſtabliſhed, but is inferred, till their compoſition be proved. They are ſimple with regard to our preſent knowledge of them, that is, they conſiſt of particles, which, ſo far as can be diſcovered, are ſimilar to each other, and they are regarded as the elements of which all other bodies are compoſed. It is ſufficient to ſtate their diſtinguiſhing characters, and the principal compounds which they form.

The firſt order of theſe ſubſtances, thoſe which ſeem beſt entitled to the character of ſimplicity, are the *Simple Gases*, Oxygen, Azot and Hydrogen. Modern chemiſtry has demonſtrated, that theſe gaſes are ſolid ſubſtances, brought into the aerial form by the operation of caloric. In the new nomenclature, therefore, the name of each is given to the baſe, and from this the appellation of the air or gas is derived.

Of theſe ſimple bodies, Oxygen is the moſt important, ſince it is either capable of combining with, or forms a component part of the greater number of the productions of nature. Like other gaſes, it is inviſible, and permanently elaſtic; its ſpecific gravity is a little ſuperior to that of atmoſpheric air. Its diſtinguiſhing characters are its capacity of ſupporting combuſtion and animal life. It is indeed the only ſubſtance that can ſupport either of theſe proceſſes, and it is abſolutely neceſſary to enable them to be carried on.

The influence of this air in ſupporting combuſtion, is more particularly to be aſſumed as its diſtinguiſhing chemical character, ſince ſo many of the moſt important chemical agents are formed by this operation. It is proved by the moſt unequivocal experiments, that combuſtion is nothing more than the combination of oxygen with the combuſtible body. Burnt bodies are therefore merely ſubſtances combined with oxygen: that principle is contained in them in very various quantities, and is retained by very different degrees of attractive force.

Many ſubſtances can alſo be combined with oxygen, without the phenomena of combuſtion taking place, that is, without the diſengagement of light and caloric. This happens when the oxygen has been previouſly combined with another body, and is only transferred from it by the exertion of a ſuperior affinity. It happens, too, when the oxygen is ſlowly abſorbed from the atmoſphere, at the natural temperature. It is thus that many animal and vegetable ſubſtances are altered by expoſure to the air. The abſorption in theſe caſes is ſo gradual, that the caloric, and perhaps the light, which are diſengaged, are not perceptible.

The compounds reſulting from the union of oxygen with other bodies, are among the moſt active of the chemical agents.

It forms one-fourth part of the atmoſpheric air, and it is principally upon its action that the many chemical changes produced on bodies by that air depend. United with hydrogen, it forms water, the ſubſtance which of all others has the greateſt ſhare in promoting chemical combinations.

Another order of important compounds reſulting from the union of oxygen with other bo-bodies, is that of Acids. Theſe are diſtinguiſhed by their ſour, ſtyptic ſtate; by their greater or leſs cauſticity; by their changing the vegetable colours to a red; and by their combining with the alkalies, earths, and metals, forming peculiar compounds in which the acid properties are totally loſt. They are compounds of inflammable ſubſtances with oxygen, and this element derives its name from being the principle of acidity.

With the ſame ſubſtance oxygen is capable of combining in different proportions, ſo as to form different acids, the more powerful acid being generally formed by the larger proportion of oxygen.

The nomenclature of the acids is deſigned to expreſs theſe facts. The name of each acid is derived from the ſubſtance of which, combined with oxygen, it is formed; and by a variation in termination, the different acids reſulting from the different degrees of oxygenation of this baſe are denoted; the name of the more perfect acid terminating in the ſyllable *ic*, that of the one with the leſs proportion of oxygen in *ous*. Thus ſulphur, with two proportions of oxygen, forms ſulphureous and ſulphuric acids.

Acids have a great tendency to combination. From this, and from the facility with which they are in general decompoſed and part with oxygen, they are the moſt active of any of the compound chemical agents, and are uſed in many pharmaceutic operations.

Laſtly, oxygen unites with many bodies without rendering them acid; it then forms an order of bodies termed OXYDS. It in general communicates to them a greater tendency to combination. To this order belong almoſt all the compounds it forms with the metals, and the greater number of the vegetable and animal products.

The ſecond of the Simple Gaſes is AZOT. Like oxygen, when pure, it exiſts always in the gaſeous form, forming azotic gas. This gas, with leſs than one-fourth part of oxygen, conſtitutes the common atmoſpheric air. It poſſeſſes no remarkable property by which it may be characterized, and therefore it is rather diſtinguiſhed by its negative qualities. It is lighter than atmoſpheric air, its ſpecific gravity, compared with it, being as 985 to 1000; it is unable to ſupport combuſtion or reſpiration; it is not abſorbed by water, at leaſt in any conſiderable quantity; and it is not inflammable in the ſtrict ſenſe of the term, for although it combines with oxygen, yet the combination is not ſudden, nor is it attended with the emiſſion of light, and with ſcarcely any extrication of caloric.

Azot combined with oxygen, in proportions in which theſe two elements are mutually ſaturated, forms a powerful acid, the Nitric; with a ſmaller proportion of oxygen it forms the Nitrous Acid. Theſe acids are very eaſily decompoſed, and hence are often employed in chemical operations to afford oxygen to other bodies. With ſmaller proportions of oxygen, it forms two gaſes, neither of which has acid properties; Nitrous Gas, compoſed of 44 of azot with 56 of oxygen, diſtinguiſhed by the facility with which it unites with an additional proportion of oxygen; and Nitrous Oxyd, conſiſting of 63 of azot, and 37 of oxygen, peculiarly characterized by its high exhilarating powers on the animal ſyſtem. Combined with hydrogen, in the proportion of 121 parts to 32, it forms Ammonia, or Volatile Alkali, and hence it has been ſuppoſed, from analogy, that the other two alkalies alſo contain azot as a conſtituent principle.

Laſtly, azot is contained in great abundance in animal matters, and is the principle which diſtinguiſhes them, by their chemical compoſition, from vegetables.

The laſt of theſe ſimple airs is HYDROGEN. It is the lighteſt of all the gaſes, its ſpecific gravity, when it is in its pureſt ſtate, being to that of atmoſpheric air as 13 to 1. It is highly inflammable ; one part of it mixed with four parts of atmoſpheric air, exploding with violence on the approach of an ignited body.

The moſt important compound of hydrogen is Water, formed by its union with oxygen, in the proportion of 15 parts, by weight, of the former to 85 of the latter. As a chemical agent, water is of the firſt importance, both from its very extenſive power of combination, and from its agency in affording oxygen. It is the ſolvent of all ſaline, and of the greater number of the earthy ſubſtances ; and it likewiſe diſſolves a number of the vegetable and animal products. In theſe combinations, it is ſingular that the general law of chemical attraction, that combination alters the properties of bodies, is ſcarcely obſerved ; the properties of the bodies diſſolved by water remaining almoſt invariably nearly the ſame, and that fluidity being merely communicated to them which is neceſſary for their mutual chemical action, or which renders convenient their preparation as medicines.

Water is farther an important chemical agent, by affording oxygen to a number of bodies. Thus, many of the metals are ſlowly oxydated by it; and in their ſolutions by acids, it is frequently from the water that the metal receives oxygen. The vegetable and animal products receive oxygen alſo from the water they contain; and in the decompoſitions which they ſuffer, whether from the re-action of their principles at a natural temperature, or by expoſure to heat, the elements of the water preſent enter into the compoſition of the products which ſuch analyſes afford.

Under the appellation of *SIMPLE INFLAMMABLE SUBSTANCES*, are commonly deſcribed three bodies, Carbon, Sulphur, and Phoſphorus. They exiſt in the ſolid form, but are totally deſtitute of the metallic ſplendour, opacity and gravity. They are highly inflammable, and form acids when united with oxygen.

CARBON, the firſt of theſe, is an inflammable matter, the baſis of common charcoal. In this ſubſtance, it was ſuppoſed to be merely mixed with oxyd of iron, and ſome other impurities. But the experiments of Guyton have proved that it is alſo combined with a portion of oxygen, and that the *Diamond* is the pure inflammable baſe. Charcoal therefore, or the black porous ſubſtance which remains after the imperfect combuſtion of wood, is an oxyd of carbon containing 36 parts of oxygen in the 100. It is inflammable. Combined with a larger quantity of oxygen, it forms a gas ſtill poſſeſſing the property of inflammability, the Gaſeous Oxyd of Carbon. Saturated with oxygen, it forms a gas poſſeſſing the properties of an acid; Carbonic Acid, or what was formerly named Fixed Air. Its acid powers are extremely inconſiderable, and its attractions ſo weak, that it is diſplaced from its combinations by all the other acids. Carbon, with hydrogen and oxygen, forms ſeveral compounds poſſeſſing inflammability. Some of them exiſt in the gaſeous form, and differ ſlightly in their properties from each other. Alkohol, which is the product of fermentation from ſugar, and which when pure is a colourleſs fluid, fragrant and pungent, volatile and inflammable, is a compound of a ſimilar kind; and Ether, which is formed by the action of acids from alkohol, and which is ſtill more light and volatile, is nearly of the ſame compoſition, differing from alkohol principally in containing a larger proportion of hydrogen.

Sulphur is a ſimple inflammable ſubſtance found in abundance in nature, either pure or in combination with metals. When pure, it is hard and brittle, ſemitranſparent, of a light yellow colour, inſipid, emitting when ſlightly heated a fœtid ſmell. It melts and volatilizes at a very low temperature, that of 185°; at a temperature of 302°, it burns with a blue flame, when atmoſpheric air is admitted.

Sulphur combines with oxygen, hydrogen, phoſphorus, with many of the metals, and indeed with the greater number of the ſimple bodies. Its combination with oxygen forms the Sulphuric and Sulphureous Acids. The latter is gaſeous, has a pungent ſuffocating odour, and does not poſſeſs the acid properties in a very eminent degree. The former is fixed and inodorous; in the general acid powers it is ſuperior to any body of the ſame claſs; it has a ſtrong attraction to water, and is always combined with it; it exerts alſo ſtrong affinities to the alkalies, earths and metallic oxyds, and oxydates the metals, and the greater number of inflammable bodies. It is therefore extenſively uſed in chemical and pharmaceutical operations.

With hydrogen, ſulphur forms a compound, Sulphurated Hydrogen, which exiſts in the aerial form, and is diſtinguiſhed by its very fœtid ſmell. It reſembles the acids in ſeveral of its properties. Sulphur is alſo a component part of ſome animal ſubſtances, and it has even been detected in a few vegetables.

The laſt of theſe ſimple ſubſtances is Phosphorus, a ſubſtance with which we have been made acquainted only by the art of the chemiſt. It exiſts no where pure and uncombined, but its acid its found in great abundance in nature. In the foſſil kingdom, it is combined with ſeveral of the earths and metals, and it forms a component part of many animal and ſeveral vegetable productions.

Phoſphorus is always obtained by decompoſing this acid, by heating it with carbon, which attracts its oxygen. The phoſphorus is ſublimed

med in cloſe veſſels; it is of a ſoft tenacious conſiſtence like wax; tranſparent, of a pale yellowiſh colour. It emits fumes, which are owing to its combination with the oxygen of the atmoſphere. From this combination, two acids are formed, according to the proportion of oxygen: the Phoſphorous, which is fœtid, and when heated, emits luminous vapours; and the Phoſphoric, which is inodorous, and more powerful as an acid than the other. Phoſphorus is one of the component principles of animal ſubſtances.

Beſides the acids formed by the oxygenation of theſe ſimple inflammable bodies, there are three not yet decompoſed, but which are ſuppoſed from analogy to be of a ſimilar compoſition; the Muriatic, Fluoric, and Boracic.

The Muriatic Acid exiſts in ſea-ſalt, and in various other natural ſubſtances. In its pure ſtate it is gaſeous, has a pungent ſuffocating odour, and extinguiſhes combuſtion. It is rapidly abſorbed, and in large quantity, by water; and it is under the form of this ſolution that it is generally uſed. It poſſeſſes in an eminent degree the general acid properties. It combines with the alkalies and earths; and though incapable of affording oxygen directly to the metals, it effects the oxydation of many of them, by enabling them to decompoſe the water it contains. This acid is capable of being combined with a conſiderable proportion of oxygen, forming the Oxy-muriatic Acid. The acid powers of this are inferior to thoſe of the ſimple muriatic acid; but parting with facility with the oxygen combined with it, it acts with more energy on many inflammable ſubſtances.

The Fluoric and Boracic Acids cannot be regarded as pharmaceutic agents.

The *Metals*, the third order of ſimple ſubſtances, are diſtinguiſhed by their opacity, brilliancy, fuſibility, ductility, malleability, and by a ſpecific gravity ſuperior to that of any other claſs of bodies. They are truly inflammable, ſince they are capable of combining with oxygen, and many of them during their oxydation emit light and caloric. It ſcarcely comes within the limits of pharmaceutic chemiſtry to notice all the metals particularly: it is ſufficient to take a general view of their properties, and of their influence in combination.

The metals are very various in their degree of fuſibility. Mercury does not become ſolid but at a temperature equal to 40 degrees below 0 of Fahr., while iron or platina requires a very intenſe heat for its fuſion. They differ alſo in their ductility and malleability. Gold is at once the moſt ductile and moſt malleable, that is, it can be drawn into the fineſt wire, and beat into the thinneſt plates, without its texture being injured. The other metals poſſeſs theſe properties in different degrees, ſome being ductile which are ſcarcely malleable, and *vice verſá*. Others are neither ductile nor malleable. Theſe have been improperly termed Semi-metals. Specific gravity is the property by which the metals are moſt clearly diſtinguiſhed. The ſpecific gravity of the heavieſt ſtone is to that of water as 4 to 1, while that of the lighteſt metal is as 6 to 1.

Metals are very ſuſceptible of combination. They unite with ſulphur, with phoſphorus, and with each other. Their combinations with oxygen are the moſt extenſive and important.

This combination is effected in different ways. When raiſed to a temperature more or leſs high, with the acceſs of atmoſpheric air, they attract oxygen; ſome are oxydated rapidly, and exhibit all the phenomena of combuſtion; others undergo this operation much more ſlowly; and there are ſome (gold, ſilver and platina) which can ſcarcely be oxydated in this manner. Several of them are oxydated by the agency of water. It is thus that iron and ſome others, eſpecially when aſſiſted by a high temperature, attract oxygen from water, the hydrogen being diſengaged. Laſtly, all of them may be oxydated by the action of acids. The acid itſelf is not only decompoſed, by its oxygen being attracted by the metal, but its preſence enables ſeveral of the metals to decompoſe the water preſent with great rapidity.

The reſults of theſe combinations are compounds, which in general belong to the claſs of oxyds. They are deſtitute of the metallic qualities, and are more ſimilar to earths, being in general inſipid, inſoluble in water, and vitrifiable by heat. Four metals, Tungſten, Molybdena,

dena, Arſenic, and Tin, can be ſo highly oxygenated as to paſs into the acid ſtate.

Metals attract very different quantities of oxygen. Some combine with only a ſmall proportion of that principle, while others can take up nearly their own weight.

Each metal, too, combines with certain different proportions, and the oxyd produced by each proportion differs in its properties from that produced by the others. The firſt degree of oxygenation generally produces an oxyd, having a colour not much different from that of the metal: by higher oxygenation, more brilliant colours are produced.

Metals alſo attract oxygen with very unequal degrees of force. Hence one metal can often be oxydated merely by heating it with the oxyd of another. Some oxyds, too, as thoſe of gold, ſilver and mercury, are decompoſed by the mere agency of caloric, at a temperature not raiſed very high, and even by the action of light at the natural temperature.

It is principally from their combination with oxygen that metals derive their activity. They are, for inſtance, incapable of combining with the earths, unleſs they have been previouſly oxydated. The caſe is the ſame with reſpect to the acids. If the metal has not been previouſly oxydated, it immediately decompoſes either part of the acid, or of the water preſent, and then this oxyd combines with the remaining acid. The union of the different metals with the different acids, is much influenced by the degree of their oxygenation; and at a high degree of oxygenation they frequently become incapable of combining with the acid. Hence, many metallic ſolutions are decompoſed by expoſure to the atmoſphere; the metal attracting more oxygen, and becoming inſoluble in the acid. In the ſame manner, heating a metallic ſolution, often decompoſes it, as it enables the metal to attract more oxygen from the acid. The different oxyds have very different degrees of attraction to the acids, and hence ſome are able to decompoſe the combinations others form.

Metals are rendered active on the ſyſtem, only by being combined with oxygen, or with acids. The moſt deleterious of them prove innocent in the metallic ſtate, and produce their bad effects only when given oxydated, or when oxydated by ſome of the animal fluids. In general, they are more active the more oxygen they contain; and they are always rendered more powerful when the oxyd is farther combined with an acid. The mildeſt preparation of mercury, for example, is that prepared by trituration merely, in which the mercury approaches neareſt to the metallic ſtate, and the moſt virulent preparation of that metal is the corroſive muriat, in which it is very highly oxydated.

The laſt claſs of ſimple ſubſtances is the *Earths.* They have uſually been defined ſubſtances, inſipid, infuſible, having little ſolubility, uninflammable, having a ſpecific gravity, compared with water as a ſtandard, always leſs than 5 to 1, and combining with acids to form neutral ſalts. Of theſe characters ſome apply only to ſome earths; that of inſipidity, for inſtance, is confined to two or three; others, as lime and barytes, being conſiderably ſapid.

Theſe characters too are underſtood as applying to pure earths; ſubſtances which, ſo far as has been diſcovered, are abſolutely ſimple. Theſe by combination, or intimate mixture with each other, and with other bodies, give riſe to a vaſt variety of compounds, ſtill diſtinguiſhed by the title of Earths, but to which theſe characters are only in part applicable. Such compounds are not the objects of pharmaceutic inveſtigation, it being only the pure earths, or combinations of them effected by art, that are uſed in medicine.

The principal earths are ſix; Silex, Argil, Magneſia, Lime, Barytes, and Strontites. Of late two or three others have been diſcovered, but in quantities ſo minute as not to require notice in this ſketch.

Silex, though an abundant ingredient in ſtones, ſcarcely exiſts pure in nature. When obtained by a chemical proceſs, it is in the form of a light white powder. Its chemical character is its little ſuſceptibility of combination. It unites with none of the acids, the fluoric excepted. It is diſſolved by potaſh and ſoda; and by fuſion it combines with the earths and metallic oxyds.

Argil is diſtinguiſhed by inſipidity, infuſibility by heat, inſolubility in water, and by forming a ductile paſte with that fluid, but more completely by the compounds which it forms with acids. It is never uſed in medicine in its pure ſtate; but ſome of its compounds, eſpecially that reſulting from its union with ſulphuric acid, are employed. The ſalts formed by its combination with acids, have one general medicinal character, that of being poſſeſſed of a conſiderable degree of aſtringency.

MAGNESIA, when pure, is always in the form of a fine white very light powder. It is infuſible; inſoluble in leſs than 2000 parts of water; and does not form with it a ductile paſte; is ſomewhat ſapid; changes the colours of vegetables to a green, and forms with the acids peculiar neutral ſalts. It is never found in a pure ſtate in nature, but is always the produce of art.

Magneſia, in its pure ſtate, is extenſively uſed in medicine, as are alſo ſeveral of its compounds. It is given as an antacid, and the ſalts it forms with the acids have all a cathartic power.

LIME is diſtinguiſhed by its diſagreeable, penetrating, ſtyptic taſte. It attracts water rapidly from the atmoſphere; it is heated when water is poured on it, and falls into a dry white powder; it is ſoluble in about 700 parts of that fluid, and its ſolution changes the vegetable colours to a green. In the fire, it is infuſible by itſelf; it fuſes, however, when mixed with the other earths; it combines with almoſt all the acids.

Lime is uſed in medicine as an antacid, as an aſtringent, and as a remedy in calculus. It is given in the form of ſolution in water. Some of its compounds, particularly that with the carbonic acid, are alſo uſed to correct acidity, and are ſometimes preferred, as being leſs acrid than the pure lime.

Barytes is diſtinguiſhed by its great ſpecific gravity, which is ſuperior to that of every other foſſil not metallic. In nature, it is always found combined with the ſulphuric or carbonic acid. When pure, it is in the form of a very fine white powder; it is fuſible and ſoluble in 20 parts of water, its ſolution changing the vegetable colours to a green; its attractions to the acids are in general much ſuperior to thoſe of any of the other earths.

Barytes has a much more powerful action on the ſyſtem than the other earths have. Even in a ſmall doſe it occaſions vertigo, inſenſibility, and other nervous ſymptoms. From this circumſtance, as well as from its great ſpecific gravity, ſome have ſuppoſed that it is a metallic oxyd, which we have hitherto been unable to decompoſe.

STRONTITES is, in many of its properties, ſimilar to barytes. Like it, it is found in nature combined with ſulphuric and carbonic acids, and theſe compounds are diſtinguiſhed by great ſpecific gravity. It is fuſible, but leſs ſoluble, requiring 200 parts of water for its ſolution. Its ſaline combinations are, on the contrary, in general, more ſoluble than thoſe of barytes. It has no poiſonous quality, or does not appear to exert any great activity on the animal ſyſtem.

The *ALKALIES* are ſomewhat analogous in their properties to the earths; they are diſtinguiſhed by the following characters. They have a penetrating acrid taſte; change the vegetable colours to a green; have a ſtrong attraction for water, unite with oils, and combine with the acids, forming neutral ſalts. There are three ſubſtances of this kind; Potaſh, Soda and Ammonia. There is reaſon to believe that they are compounds. One of them, ammonia, is proved to conſiſt of azot and hydrogen, which renders probable the opinion that the others are alſo compounds, though they have not hitherto been decompoſed.

Potash is the moſt powerful of theſe ſubſtances: it is ſolid, and cryſtallizable, of a white colour, is highly acrid and cauſtic, has ſo ſtrong an attraction to water as to take it from almoſt any other ſubſtance. It melts at a moderate temperature; by fuſion with ſiliceous earth it forms glaſs; it has a ſtronger attraction than either of the other alkalies for the acids, and therefore the compounds it forms are not eaſily decompoſed.

This ſubſtance is obtained from vegetable matter, principally the ligneous part. This is made to burn ſlowly, till its carbon is totally deſtroyed: a ſaline maſs remains, which conſiſts principally of potaſh. There is reaſon to believe that it is formed during the combuſtion, ſince, although it can be detected by other means as a component principle of vegetable matter, it is only in ſome vegetables, and never in ſuch quantities as are afforded by the combuſtion.

The phyſical characters of Soda are ſo preciſely the ſame with thoſe of potaſh, that it is ſcarcely poſſible to diſtinguiſh them when both are in a ſtate of purity. Soda, it is ſaid, attracts humidity from the atmoſphere leſs rapidly than potaſh.

It is by their combinations, however, that they are principally diſtinguiſhed. The ſalts, in particular, which ſoda forms with the acids, are totally different in their properties from thoſe that have potaſh for their baſe. It forms glaſs with ſilex in the ſame manner as potaſh.

Soda is obtained as well as potaſh by burning vegetables. It is, however, only ſea plants, or thoſe that grow by the ſea-ſhore, that afford it: it has therefore been ſuppoſed, that theſe plants may contain ſea-ſalt, or muriat of ſoda, and that it is from the decompoſition of this ſalt that the ſoda is derived.

The third of theſe alkalies, Ammonia, differs much from the others. It can never be obtained in the ſolid or fluid form, but when pure, is always in the ſtate of gas: it is abſorbed in great quantity by water, and thus forms a ſolution of pure ammonia. Its ſmell is extremely pungent: it is alſo volatile, eſcaping gradually from the water in which it has been diſſolved: hence it has received the appellation of Volatile Alkali. It is conſidered as a leſs powerful alkali than either of the others: it does not combine with the ſiliceous earth; it acts more feebly on animal matter, and it adheres to the acids with much leſs force.

Ammonia is compoſed of azot and hydrogen, in the proportion of 121 of the former to 32 of the latter. It is obtained in great quantity by expoſing animal ſubſtances to heat: they are decompoſed, and part of their hydrogen and azot combining form ammonia.

The alkalies are all uſed in medicine, and their combinations form ſome of the moſt important articles of the Materia Medica. They are alſo important pharmaceutic agents.

With the alkalies, earths, and metallic oxyds, the acids combine and form an order of compounds termed *Neutral Salts*. In theſe, the properties of the acid, as well as of the baſe with which it is united, are in general loſt; the compound acquires ſome new properties; it has in general a conſiderable attraction for water, and it is capable of aſſuming a cryſtalline form. The acids adhere with very different degrees of force to theſe baſes; in general the attractions of the earths to the acids are greater than thoſe of the metallic oxyds, and thoſe of the alkalies greater than of the earths.

The names of the neutral ſalts are taken partly from the acid, and partly from the baſe; the generic name is derived from the acid, the ſpecific from the baſe to which it is united. Thus, all the ſalts compoſed of the ſulphuric acid, are arranged together under the name of Sulphats; and each ſpecies is named from the ſubſtance to which the acid is united, as the Sulphat of Potaſh, the Sulphat of Lime, &c.: And as each acidifiable baſe can be combined with different proportions of oxygen, ſo as to form acids of different qualities, the ſalts formed by theſe are diſtinguiſhed by a variation in the termination of the generic name. Thus, the ſalts formed by the ſulphurous acid are termed Sulphites. In this manner the nomenclature of all the compound ſalts is eſtabliſhed.

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It remains to notice the analyſis of the *VEGETABLE* and *ANIMAL PRODUCTS*, important in a pharmaceutic point of point, as ſo many of them are employed in medicine. The Vegetable kingdom, in particular, furniſhes by far the greater part of the articles of the Materia Medica.

Thoſe ſubſtances which are the products of organization, are very different in their chemical characters from thoſe belonging to the mineral kingdom.

The latter we can eaſily analyſe. We can determine the number and proportions of their conſtituent principles with accuracy, and their analyſis can often be confirmed by ſyntheſis; in other words, we are able by artificial combination to form compounds poſſeſſed of the ſame chemical qualities as the bodies we have analyſed. But with regard to the products of the vegetable and animal ſyſtems, the caſe is extremely different. If we are able to detect their component principles, we can ſcarcely determine their proportions; much leſs are we able to aſcertain the mode in which they are combined.

In no inſtance, therefore, does the analyſis enable us to combine the principles, whether proximate or ultimate, which we have obtained, ſo as to form any compound at all reſembling that which has been analyſed. Theſe productions, too, conſiſt of a few principles, chiefly of carbon, hydrogen and oxygen, with the addition of azot and phoſphorus in the animal kingdom; while the compounds belonging to the mineral kingdom are more varied in their compoſition.

The products of organization are likewiſe diſtinguiſhed by ſuſceptibility of decompoſition. Their principles, having ſtrong mutual attractions, are diſpoſed to react on each other; and if this be favoured by humidity, or ſlight increaſe of temperature, new combinations are formed, whence the original compounds are deſtroyed.

In the analyſis of theſe ſubſtances, it is neceſſary to mark an important diſtinction,—that between the proximate and ultimate principles of a compound. Two compounds may unite and form one ſubſtance; and this ſubſtance, by the means which analyſis affords, may be reſolved into the compound bodies of which it was immediately formed, or into the ſimple principles of which they conſiſt. The former are its Proximate,

ximate, the latter its Ultimate Principles. The proximate principles of vegetable products are gum, reſin, oil, &c.; their ultimate principles, are chiefly carbon, hydrogen and oxygen.

In ſubjecting any vegetable to analyſis, the firſt object is to diſcover what are its proximate principles. For this purpoſe we ſubject it to the action of caloric, and of different chemical agents.

By the firſt, we ſeparate thoſe principles that are volatile, ſuch as the eſſential oil. The application of this mean is, however, very limited, ſince an increaſe of temperature, not much exceeding that which is neceſſary to diſengage any of their volatile principles, tends not merely to ſeparate, but actually to decompoſe them. It is neceſſary, therefore, that the temperature ſhould not exceed 212° of Fahrenheit's ſcale, which is obtained by heating theſe ſubſtances with water, when the volatile principles eſcape without any decompoſition alongſt with the aqueous vapour.

Of the different chemical agents uſeful in the vegetable analyſis, water diſſolves the gummy and extractive parts, the ſaline ſubſtances, and ſeveral other principles of inferior importance. Alkohol diſſolves the reſin, balſam, camphor, and eſſential oil. The ſubſtances which alkohol diſſolves are ſeparated by water; while the gum, which water holds in ſolution, is precipitated by alkohol. Ether diſſolves the ſame principles as alkohol; it farther diſſolves the elaſtic gum of ſome vegetables, and it precipitates the extractive matter from water. The alkalies diſcover ſeveral of the acids contained in vegetable ſubſtances, and the acids are ſometimes uſed as teſts.

Laſtly, in the analyſis of vegetables, we are often able to procure ſeveral of their proximate principles by mechanical means, particularly by expreſſion. Sometimes, alſo, they exude ſpontaneouſly from the growing vegetable, or are obtained from it by inciſions made in the branches or trunk.

After we have diſcovered the proximate principles of vegetables, the next ſtep is to aſcertain their compoſition. This, with reſpect to their ultimate principles, is nearly uniform; the differences in their chemical properties and ſenſible qualities ariſing principally from differences in the proportions of theſe principles, and in the modes in which they are combined. Theſe differences are too ſubtile to be very accurately determined by analyſis, and hence this ſpecies of inveſtigation is now acknowledged to convey no information on the medicinal powers of vegetables. Beſides carbon, hydrogen and oxygen, which are their principal conſtituent parts; ſome of them contain azot and phoſphorus, which modify their properties. Various metals, too, particularly iron and manganeſe, lime and the three alkalies, either pure, or in combination with ſome of the acids, are not unfrequently conſtituents of vegetable matter, though never in any conſiderable proportion, nor is it certain but that ſome of theſe are formed during the analyſis by which they are obtained.

The proximate principles of vegetables are ſometimes analyſed by mere expoſure to heat; their elements enter into new combinations, and from the products we diſcover what the principles were, and even, to a certain extent, in what proportions they had been united. Sometimes the atmoſpheric air is admitted when they are raiſed to the temperature of ignition, and by collecting the ſubſtances formed by their combuſtion, we form a ſimilar judgment as to their compoſition. Others of them are capable of undergoing fermentation; and from the products of this proceſs, the conſtituent principles of the ſubſtance operated on are determined. Laſtly, their analyſis may often be effected by the agency of the nitric acid, which communicates to them oxygen, and by the reſulting compound aſcertains the nature of their acidifiable baſe.

The Proximate Principles of Vegetables are numerous, and of very different kinds. They are not all to be met with in every plant, or in every period of vegetation, but each of them is to be found in ſome plants, at certain periods of their growth.

They are all the products of vegetation from a common juice or ſap, which circulates freely through every part of the vegetable ſyſtem, which is uniformly ſupplied by abſorption, and which is perpetually changing its compoſition, according to the ſtate of the plant. This ſap being brought into contact, in the veſſels of the vegetable, with the gaſeous bodies abſorbed by its leaves, is by the action of theſe veſſels, aſſiſted ed by the agency of light, changed in its compoſition, and thus the peculiar products of the vegetable are formed.

The firſt tranſition of the ſap ſeems to be into Mucilage or Gum, as this is one of the proximate principles contained in the greateſt quantity in vegetables, and which is abundant in young plants. It is an inodorous, inſipid and glutinous ſubſtance, ſoluble in water in every proportion, and forming with it a viſcid ſolution termed Mucilage. It is inſoluble in alkohol, ether or oil, and is precipitated from its ſolution in water by the addition of alkohól, or any of the alkalies. It does not abſorb oxygen from the atmoſphere; it is neither fuſible nor volatile. At a temperature ſuperior to 212°, but inferior to that of ignition, it is decompoſed, affording pyromucous or rather impure acetous acid, ammonia, carbonic acid and carbonated hydrogen gaſes, its reſiduum being charcoal containing lime. The principal products of its combuſtion are carbonic acid and water. By the action of nitric acid, it is converted into oxalic acid. The experiments of Mr Cruickſhank, prove it to be compoſed of oxygen, hydrogen, carbon, azot, and lime.

Gum is obtained by ſpontaneous exudation, by inciſions made in the trunk of the growing vegetable, or by decoction of any vegetable containing it in water. No proper diſtinction exiſts between it and mucilage. As a medicine, it has little activity. From its chemical qualities it is of more importance; as its mixture, with the other vegetable principles, renders them more ſoluble in watery liquors, by which their action on the ſtomach is promoted. In pharmacy, it is employed to render oils, balſams, &c. miſcible with water.

Resin is another of theſe proximate principles, moſt abundantly diffuſed through the vegetable kingdom. It is often united with gum, but ſome vegetables exude juices purely reſinous. Reſin is inſoluble in water, is ſoluble in alkohol, ether, and oils; is not acted on by oxygen at any natural temperature, but burns when heated to ignition; is fuſible at a temperature nearly that of boiling water, but incapable of being volatilized without being decompoſed. The products of its decompoſition by heat are, water, acetous acid, an empyreumatic oil, and a reſiduum of charcoal. Its conſtituent parts, therefore, are carbon, hydrogen and oxygen.

Reſins are frequently odorous and ſapid. They are more active than gums, with reſpect to their medicinal effects, the virtues of many of thoſe vegetables which act moſt powerfully as medicines depending on their reſinous part.

Gum and reſin are often intimately mixed in vegetables, forming a gum-reſin. Some of the moſt active articles of the Materia Medica, are natural compoſitions of this kind.

A proximate principle of vegetables, which, till lately, was always confounded with gum-reſin, is that termed by the French chemiſts EXTRACT OF EXTRACTIVE MATTER. The peculiar character by which it is diſtinguiſhed from gum, reſin, or any mixture of the two, is its being equally ſoluble in water and in alkohol; hence its ſolution in the one fluid is not precipitated by the addition of the other. The extractive principle alſo, when diſſolved in water, and heated to 212°, in contact with the atmoſpheric air, abſorbs oxygen with avidity, which neither gum nor reſin does. By this abſorption, it is converted into an inſipid inert ſubſtance, no longer ſoluble in water. By the oxygenated muriatic acid, it is alſo changed into an inſoluble concrete of a yellow colour. Theſe properties ſeem ſufficient to characterize it as a diſtinct principle; but there is ſtill ſome obſcurity reſpecting the mode of its exiſtence in vegetable products. According to the French chemiſts, it is the principle upon which the virtues of many vegetable medicines depend, though it is difficult to obtain it unmixed with the other principles. By expoſure to heat, it affords an empyreumatic acid and oil, and a ſmall quantity of ammonia. Its elements, therefore, are carbon, hydrogen, azot, and oxygen.

Oil is a very common proximate principle of vegetable matter; it is of two kinds, Expreſſed, or Unctuous Oil, and Diſtilled, Volatile or Eſſential Oil. Theſe have ſome common qualities, they are inflammable, inſoluble in water, and unctuous to the touch; but they are alſo poſſeſſed of peculiar properties by which they are diſtinguiſhed.

The firſt claſs, the Expreſſed, Fat, or Fixed Oils, are thick and unctuous, nearly inſipid and inodorous; they congeal on expoſure to cold, are inſoluble in water or in alkohol; they combine with the alkalies, forming ſoaps; they are not volatilized at the temperature of 212°; they are decompoſed in cloſe veſſels, and burn when the atmoſpheric air is admitted, the products of the combuſtion being water and carbonic acid. At a natural temperature they ſlowly abſorb oxygen, and by long expoſure to the air they are thickened, and at length become concrete. They conſiſt of carbon and hydrogen in the proportion nearly of 12 of the former to 3 of the latter.

Expreſſed oils are generally contained in the ſeeds and fruit of certain vegetables. They are extracted by expreſſion or decoction with water, and are thus frequently in part impregnated with the extractive, mucilaginous, or reſinous particles, whence in ſome inſtances they derive taſte, odour, and even ſome medicinal virtues. In general, however, they are inſipid, and are uſed in medicine principally for their lubricating quality; they are diffuſed in water by the medium of gum or ſugar, or by the addition of a ſmall quantity of any of the alkalies.

Volatile, Eſſential, or Diſtilled Oils, differ from the expreſſed oils in ſeveral of their properties. They are volatile at a low temperature; are entirely and quickly converted into vapour, at the heat of boiling water, without being decompoſed; they are ſoluble in a ſmall proportion in water, and are more abundantly ſoluble in alkohol; they do not combine with the alkalies with facility; they are more highly inflammable than the fixed oils, and, on expoſure to the atmoſphere, ſlowly abſorb oxygen, are thickened, and are at length converted into ſubſtances of a reſinous nature. In their compoſition, they contain more hydrogen proportioned to their carbon than the fixed oils do.

The eſſential oils are in general highly odorous, pungent, and often even acrid; they exiſt in greateſt quantity in the aromatic plants, and are uſually obtained by diſtillation; the vegetable being heated to 212° alongſt with water, and the oil being volatilized with the aqueous vapour. As medicines they poſſeſs a highly ſtimulating power.

In many vegetables there exiſts a natural combination of eſſential oil and reſin, forming a fluid more or leſs thick and tenacious, uſually alſo odorous and pungent, termed a *Balſam.* Balſams alſo contain a quantity of a peculiar vegetable acid, the Acid of Benzoin.

Another proximate principle of ſome vegetables, ſimilar in many of its properties to the eſſential oils, is CAMPHOR. It is a ſolid tenacious concrete, of a white colour, ſemi-tranſparent, having a ſtrong peculiar ſmell, and a penetrating taſte. It is inſoluble in water, but completely ſoluble in alkohol, ether, and oils; it evaporates at the common temperature of the atmoſphere, and is volatilized in cloſe veſſels without decompoſition. When its volatilization, however, is prevented, and heat applied, it is decompoſed: a volatile oil, fragrant and pungent, of a rich yellow colour, amounting nearly to one-third of the weight of the camphor, diſtills over; a quantity of charcoal remains as a reſiduum, and hydro-carbonate, and carbonic acid gaſes eſcape with a portion of the peculiar acid termed Camphoric. Camphor, therefore, differs from the eſſential oils, in containing a larger proportion of carbon, and perhaps alſo of oxygen.

Camphor is found in diſtinct veſicles in the wood and bark of ſeveral vegetables; it is alſo contained in many eſſential oils. As a medicine, it poſſeſſes conſiderable powers.

The ſame relation which camphor has to the volatile oils, Wax ſeems to bear to the fixed oils. This ſubſtance is a product of vegetation It is ſolid and tenacious, eaſily fuſible, and inflammable. It does not combine with the alkalies; but, when melted, unites with expreſſed or eſſential oils. It conſiſts of carbon and hydrogen, in the proportion nearly of 13 of the former to 2 of the latter: ſome have ſuppoſed that it alſo contains a quantity of oxygen.

Fecula is a name appropriated to a dry, white, inſipid powder, contained in many vegetables, particularly in the tuberoſe roots and gramineous ſeeds. It is extracted by beating the dried root, wood, or ſeeds, with a large quantity of water; the fluid becomes milky, from the diffuſion of a white powder through it. This, when dried, is the fecula, which, when not united with any of the other principles of the vegetable, is mild and inſipid. It is inſoluble in cold water, but with boiling water it forms a jelly. It is alſo inſoluble in alkohol. It is an oxyd having carbon and hydrogen for its baſe. It is capable of being converted by certain proceſſes into ſaccharine matter. By deſtructive diſtillation it affords a large quantity of acetous acid. The fecula is the moſt nutritious principle of plants, and is contained in great quantity in all vegetables uſed as food.

Gluten.—The farina of ſome vegetables is found to contain a viſcous, elaſtic, and fibrous-like ſubſtance, which, from its cloſe reſemblance in properties to the animal product termed Gluten, has been named Vegetable Gluten. It is inſipid, elaſtic, totally inſoluble in water, and very ſparingly ſoluble in alkohol. By the action of nitrous acid, it is converted into oxalic acid, and by expoſure to heat in cloſe veſſels, it affords a large quantity of ammonia. Its analyſis proves, that it contains more azot than any other vegetable principle.

Albumen.—This is another principle of vegetables, which receives its name from its reſemblance to a principle of animal matter. It is ſoluble in cold water, its ſolution being coagulated by heat or by alkohol; it is liable to putrefaction, and furniſhes a large quantity of ammonia on expoſure to heat. It abounds in the juices of ſeveral acrid and narcotic plants, and is alſo contained in the gramineous ſeeds.

SACCHARINE MATTER.—This exiſts in many vegetables, particularly in their fruits and roots, generally united with their gum and extractive matter. When pure, its taſte is ſweet. It is ſoluble in water and in alkohol; is capable of cryſtallization. By fermentation, it is converted into alkohol, as this, by a ſecond ſtage of fermentation, is changed into acetous acid. By the action of nitrous acid, it is converted into oxalic acid. By decompoſition by heat, it affords more than half its weight of acetous acid; a ſmall quantity of empyreumatic oil, carbonic acid, and hydrocarbonate gaſes, the reſiduum being charcoal. It conſiſts of oxygen, carbon, and hydrogen.

ESSENTIAL SALTS.—The ſaline ſubſtances contained in vegetables have been termed their Eſſential Salts. They are either acids or neutral ſalts.

There are ſeven acids found native in vegetables; the Malic, Citric, Oxalic, Gallic, Tartarous, Acetous, and Benzoic. The firſt five conſiſt of carbon and hydrogen, brought to the ſtate of an acid by oxygen, and differ from each other chiefly in the proportion of hydrogen and carbon they contain.

The Oxalic Acid contains the largeſt proportion of oxygen; and it is into it that ſeveral of the other acids, and many of the vegetable oxyds, are converted by oxydation. It is very ſoluble in water, and cryſtallizable. It is diſtinguiſhed by the very ſtrong attraction which it has for lime, which it takes from every other acid. As it exiſts in vegetables, it is commonly united with potaſh, but ſo that the acid is preſent in exceſs.

The Malic Acid is contained in apples and in many other fruits before they are ripe. It does not cryſtallize; it contains more oxygen than the citric acid does, and is converted into the oxalic acid by the action of the nitrous acid.

The Citric Acid is ſoluble in water and cryſtallizable; it has a ſtronger attraction to the earths than to the alkalies; it is not, like the malic, convertible into oxalic acid.

The Tartarous Acid, as it exiſts in vegetables, is generally combined with potaſh, but in ſuch a quantity as ſtill to leave an exceſs of acid. From this ſalt the pure acid of tartar is obtained; it is very ſoluble in water, and is cryſtallizable; it is convertible into oxalic acid; it is decompoſed by heat, and affords more empyreumatic oil than any of the other acids; hence, it has been inferred, that it contains a larger proportion of hydrogen.

The Acetous Acid, though generally the product of fermentation, has been found in the ſap of the vine, and in ſome other vegetables. It is decompoſed in a high temperature, and alongſt with the uſual products of the decompoſition of vegetable matter, it yields a ſmall quantity of ammonia.

Benzoic Acid is contained in ſeveral balſams and gum reſins: it is highly fragrant, and has a pungent acidulous taſte; it is volatile and inflammable, is ſparingly ſoluble in cold water; it is diſſolved in conſiderable quantity by boiling water, and on cooling, cryſtallizes in white flakes.

The laſt of the native vegetable acids is the Gallic Acid, hitherto diſtinguiſhed as the principle of aſtringency. It exiſts in gall-nuts, and in all thoſe vegetables termed Aſtringents. It is extracted either by maceration with water or by ſublimation. It is diſtinguiſhed from every other acid by the ſtrong attraction which it has for the oxyds of iron, and by forming with them a precipitate of a very deep black colour. It contains a very large quantity of carbon, combined with an inferior proportion of oxygen, and with a very ſmall quantity of hydrogen.

A principle, which till lately was confounded with the gallic acid, is TANNIN, or the tanning principle. It is diſtinguiſhed from every other principle by its power of combining with animal jelly, and forming a ſubſtance abſolutely inſoluble in water. It is contained in conſiderable quantity in the greater part of the vegetable aſtringents, and is generally mixed with the gallic acid.

Several of the native vegetable acids exiſt together in the ſame vegetable. They are never contained in diſtinct veſicles, but are either mixed with the mucilaginous or ſaccharine juice, or are combined with the alkalies or earths. Combinations of theſe acids with lime or potaſh, are, in particular, very abundant in the vegetable kingdom. Compounds formed by the union of the ſulphuric, nitric, muriatic, carbonic, and even phoſphoric acids with the alkalies and earths, alſo exiſt in many vegetables.

The laſt of theſe proximate principles is the Ligneous part, or woody fibre. It is the baſis to which the others are attached, and compoſes the greater part of moſt vegetables, as it forms their entire ſtructure. It is inſipid and inſoluble in water or alkohol, and conſequently remains as the reſiduum, after the active principles of any vegetable have been extracted by the action of theſe ſolvents. By the action of the nitrous acid, it affords the malic and oxalic acids; by diſtillation it yields the pyroligneous acid. Its principal conſtituent part is carbon, combined with hydrogen and oxygen.

Beſides thoſe principles of vegetables which can be exhibited as diſtinct bodies, there are ſome of a more ſubtile kind, the exiſtence of which has been maintained by many chemiſts; ſuch as the Aroma or Spiritus Rector, the Colouring Principle, the Bitter Principle, the Narcotic Principle, and ſeveral others. The exiſtence of theſe, however, is very doubtful; the properties of ſmell, taſte, colour, &c. being probably the reſult of peculiar variations in the compoſition of ſome of the known principles of vegetables, and not depending on any peculiar principle. The odour of vegetables, for inſtance, generally depends on their eſſential oil; and all the facts that have been ſtated in ſupport of a diſtinct aroma, are explicable on the known volatility of theſe oils, or on the probability of part of them being diſſolved by the atmoſpheric air.

After this enumeration of the proximate principles of vegetables, it may be propoſed as a queſtion of ſome importance, Whether they exiſt in the vegetable in a ſtate of chemical combination, or whether they are merely mixed together?

The latter ſeems moſt probable. Theſe principles can often be diſtinguiſhed as exiſting ſeparately from each other, and even as placed in ſeparate cells; they can in many caſes be ſeparated by mechanical means; and even where they are more intimately mixed, that change of properties does not take place, which we muſt have expected were they chemically united, the virtues of each principle being diſcernible in the entire mixture, weakened, but not changed. It ſeems to follow, therefore, that the virtues of vegetable ſubſtances do not depend on chemical combinations of their proximate principles, but rather on the peculiar ultimate compoſition of one or other of theſe principles. Hence alſo it is evident, that in ſeparating the proximate principles of any vegetable, we cannot expect to alter or improve its virtues, farther than in concentrating them by a ſeparation from what is inert, or in ſeparating principles which are poſſeſſed of different or even oppoſite powers. The attainment even of theſe ends, however, is, in innumerable caſes, of importance in their exhibition as medicines.

From this enumeration of the Proximate Principles of Vegetables, we may perceive the reaſons for thoſe pharmaceutic proceſſes to which plants are uſually ſubjected.

By Infuſion in water, we impregnate the fluid with the gum, ſugar, extract, tannin, ſaline ſubſtances, part of the eſſential oil, and part alſo of the reſinous principle. The aroma of the plant is generally firſt taken up: by longer infuſion the water is loaded with the colouring aſtringent and gummy parts: theſe are alſo moſt abundantly diſſolved when the temperature is high. Hence an infuſion differs according as the water has ſtood longer or ſhorter on the materials, and according as it has been promoted or not by heat. An infuſion made in the cold is in general more grateful, while one made with heat, or by keeping the fluid long upon the materials, is more ſtrongly impregnated with active matter.

By Decoction or boiling, the ſolvent power of the water is ſtill farther increaſed; and hence the liquor always appears darker coloured, and is, in fact, more loaded with the principles of the vegetable which it can hold diſſolved. The volatile parts, however, particularly the eſſential oil, are entirely diſſipated; and therefore it is an improper proceſs for thoſe vegetables whoſe virtues depend, wholly or partially, on theſe parts. Even the fixed principles of vegetables, at leaſt ſome of them, are injured by long decoction. The extractive matter, for inſtance, gradually abſorbs oxygen from the atmoſphere, and is converted into a ſubſtance nearly inſipid and inert. Opium, Peruvian bark, and many other vegetables, are injured in this manner by decoction, eſpecially if the atmoſpheric air is freely admitted; and theſe two circumſtances, the diſſipation of the volatile matter, and the oxygenation of the extractive, conſiderably limit the application of this proceſs. It is ſtill uſed, however, with advantage, to extract the mucilaginous parts of vegetables, their bitterneſs, and ſeveral others of their peculiar qualities.

Alkohol may be applied to vegetables to extract thoſe principles which are not ſoluble in water. It diſſolves entirely their eſſential oil, camphor, and reſin; and as theſe are often the parts on which the virtues of vegetables depend, theſe ſolutions, or Tinctures as they are termed, are often active preparations.

Equal parts of alkohol and water, in general, extract ſtill more completely the active matter of plants, as we thus obtain a ſolution of all thoſe ſubſtances which are ſeparately ſoluble in either of theſe fluids.

When by the action of one or both of theſe fluids, we obtain a ſolution of the active principles of a vegetable, the ſolution may be evaporated to the conſiſtence of a thick tenacious maſs. This forms what is termed an Extract: it is termed an Aqueous Extract when obtained from the aqueous infuſion or decoction of a plant, and Spiritous when alkohol has been the ſolvent. The deſign of this preparation is to obtain the active matter of the vegetable in a ſmall bulk, and in ſuch a ſtate that it may be preſerved a long time without ſuffering any alteration. It is evident, that it is a proceſs which can be properly applied to ſuch plants only as have their virtues dependent on ſome of their fixed principles, and even theſe are often injured by the heat employed, and the free acceſs of the atmoſpheric air.

Diſtillation is another proceſs applied to vegetable ſubſtances, by which we obtain ſome of their active principles, particularly their eſſential oil. If the vegetable matter be heated alongſt with the water, the oil is volatilized, alongſt with the aqueous vapour: it ſeparates from the water on being allowed to remain at reſt; a part of it, however, is alſo diſſolved, and communicates to the water a conſiderable degree of flavour, and often alſo of pungency. This forms what are termed Diſtilled Waters. If alkohol be uſed inſtead of water, the eſſential oil is completely diſſolved in it, and we thus obtain what are termed Diſtilled Spirits.

By ſuch proceſſes we extract the active matter of vegetables from the inert matter with which it is more or leſs mixed, and are enabled to adminiſter many remedies under a variety of forms, ſuited to particular circumſtances. A ſingle example will ſhew the utility of inveſtigations of this kind, reſpecting the component principles of vegetable products, and their relations to the more important chemical agents. Peruvian bark is one of the moſt important remedies in the Materia Medica. Practitioners have not always found it practicable to exhibit it in ſubſtance with advantage, as where the ſtomach is uncommonly irritable, or where, from the nature of the diſeaſe, it is neceſſary to give it in large doſes, frequently repeated, it is apt to occaſion ſickneſs and other uneaſy ſenſations, and even to be rejected by vomiting. Such inconveniencies are attempted to be obviated, by giving it in the different forms of infuſion, decoction, tincture or extract, as any of theſe may beſt agree with the patient. Our knowledge of its conſtituent parts can only lead us to the proper application of theſe proceſſes. From an accurate analyſis of it, it has been proved that ſeven parts out of eight of it conſiſt of woody fibre, or of a matter inert and inſoluble, which cannot act on the ſyſtem, and which affects the ſtomach only by its weight and inſolubility. The remaining eighth part is that in which the activity of the medicine reſides: it is therefore evident that if this be extracted, without injuring its activity, the medicine could be exhibited with much more advantage. This is in part accompliſhed by the preparations of it that have been mentioned; but even theſe do not convey it in all its force. If one ounce of the bark be infuſed or boiled in a certain quantity of water, the infuſion or decoction is not nearly equal in efficacy to the whole quantity of bark operated on. It is therefore evident that during either of theſe operations, the active matter of the bark has not been entirely extracted, or has ſuffered ſome change. And here chemiſtry lends her aſſiſtance, and ſtill farther elucidates the peculiar nature of this ſubſtance, and the changes produced in it by theſe proceſſes. It has been proved by experiments, that the matter on which the power of the bark depends, has a ſtrong attraction for oxygen at a temperature moderately increaſed; that during the infuſion, and particularly during the decoction of that drug, this active matter abſorbs oxygen from the atmoſphere, and is converted into a ſubſtance inſipid, and inert. This leads to the improvement of the preparations of this medicine; and experiments inſtituted for the purpoſe have accordingly proved, that, while by long boiling the virtues of the bark are nearly totally deſtroyed, they are fully extracted by a few minutes decoction in covered veſſels. The ſame inveſtigations have pointed out the nature of the action of ſome other ſubſtances on bark, formerly not well underſtood. Thus, it has been found by experience, that the alkalies, and more particularly magneſia, enable water to extract the virtues of bark, more completely by infuſion,—a circumſtance elucidated by the fact ſince diſcovered, that the extractive matter of the bark, to which its activity is owing, combines with facility with theſe ſubſtances, and forms ſoluble compounds *.

Similar examples might be given of ſeveral other important vegetable remedies, which would ſufficiently prove the utility to be derived from the analyſis of the vegetable kingdom, and that indeed reſearches of this kind are abſolutely neceſſary for the preparation of ſubſtances belonging to it as medicines.

It remains only to notice the Animal Analyſis. But on this few obſervations need to be made; as there are comparatively but a ſmall number of the articles of the Materia Medica which belong to the animal kingdom.

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* Annales de Chimie, tom. ix. p. 19.

The animal products have the ſame general chemical characters as vegetables. They differ from them in being more liable to the proceſs named Putrefaction; and in affording a large quantity of ammonia, when decompoſed by heat. Theſe differences depend principally on the preſence of azot in a much larger proportion in the animal than in the vegetable products; which, during their decompoſition, combines with the hydrogen they alſo contain, and furniſhes the ammonia which is ſo abundantly diſcharged. Animal ſubſtances alſo contain ſulphur and phoſphorus; and in general a ſmaller proportion of carbon enters into their compoſition than into that of vegetables.

Notwithſtanding theſe differences, there are many of the animal products which cloſely reſemble the vegetable principles in their properties. The vegetable gluten and albumen are ſimilar to the animal. The vegetable oils and butters reſemble the animal fats. Gelatin has a reſemblance to mucilage or fecula. A principle ſimilar to the vegetable ſaccharine matter is found in milk. In ſome of the animal ſecretions, there are ſubſtances of a reſinous nature;

and the animal acids do not differ greatly from the vegetable compounds of the ſame claſs. Many of theſe ſubſtances, therefore, are acted on by chemical agents in a ſimilar manner to vegetables, and, for medicinal purpoſes, are ſubjected to ſimilar pharmaceutic proceſſes.

## PART II.

# MATERIA MEDICA.

THE ſyſtems of claſſification of the articles of the Materia Medica, which are founded on their ſenſible qualities, their chemical compoſitions and properties, or their characters as objects of natural hiſtory, are extremely defective. They aſſociate ſubſtances, which, as medicines, have little reſemblance, and ſeparate others which are intimately connected.

As the ſtudy of the Materia Medica is merely the ſtudy of the medicinal properties of certain ſubſtances, it is evident that the method of arranging them, as they agree in producing effects on the living ſyſtem, is the one beſt calculated to fulfil all its objects.

The foundation of the claſſes being ſimilarity of operation, thoſe ſubſtances are arranged together which have the cloſeſt reſemblance in medicinal power, and although, when the extremes of the claſſes are conſidered, ſubſtances may ſometimes be found aſſociated which appear to be little connected, yet this can never be ſo much ſo as in the other ſyſtems of claſſification, and the connection, though apparently remote, may always by ſlight gradations be traced.

It is acknowledged, that the *Operations* of medicines, on which ſuch a claſſification is to be formed, are often extremely obſcure; yet where the aſſociation is eſtabliſhed from a certain effect produced by the ſubſtances arranged together, and not from a mere opinion as to their mode of operation, this obſcurity is, at leaſt in this point of view, of comparatively little importance, and diſtinctions may be eſtabliſhed in general ſufficiently preciſe.

In explaining the operations of medicines, and claſſing them according to theſe operations, it is to be regarded as a firſt principle, that they act only on the living body. The preſence of life is accompanied with peculiar properties, and with modes of action, inexplicable on mere mechanical or chemical principles. Subſtances acting on the living ſyſtem no doubt produce effects referable to theſe; but the changes they produce are alſo always ſo far modified as to be peculiar in themſelves, and regulated by laws excluſively belonging to organized matter.

Medicines, in general, operate by ſtimulating the living fibre, or exciting it to motion. This propoſition has even been ſtated as univerſal, and was received as an axiom, in a ſyſtem ſuperior, perhaps, to any, in conveying juſt and preciſe ideas on the nature of life, and the affections to which it is ſubject. Medicines, in common with all external agents, are, according to this ſyſtem, incapable of directly altering the ſtate of the vital power: they can only excite the parts poſſeſſed of that power to action; and however diverſified their effects may appear to be, ſuch diverſities are to be referred merely to the different degrees of force in which they exert the general ſtimulant power they poſſeſs.

This propoſition cannot, however, be received in an unlimited ſenſe. From the exhibition of different medicines, very different effects are produced, which cannot be ſatisfactorily explained from the cauſe aſſigned,—the difference in the *degree* of ſtimulant operation. They differ in *kind* ſo far, that even in the greater number of caſes, one remedy cannot by any management of doſe or adminiſtration be made to produce the effects which reſult from the action of another.

It is therefore neceſſary to admit ſome modifications of the general principles above ſtated, and the following are perhaps ſufficient to afford grounds for explaining the operations of remedies, and for eſtabliſhing a claſſification of them ſufficiently juſt and comprehenſive.

I. Stimulants are not to be regarded as differing merely in the degree of ſtimulant operation which they exert. An important diſtinction exiſts between them, as they are more or leſs diffuſible and permanent in their action. A ſtimulus is termed Diffuſible, which, whenever it is applied, or at leaſt in a very ſhort time after, extends its action over the whole ſyſtem, and quickly produces its full exciting effect. A diffuſible ſtimulus is generally alſo tranſient in its action; in other words, the effect, though ſoon produced, quickly ceaſes. There are others, on the contrary, which, though equally powerful ſtimulants, are ſlow and permanent. Theſe varieties, which are ſufficiently eſtabliſhed, ſerve to explain the differences in the powers of a number of the moſt important medicines; and they lay the foundation for the diſtinction of two great claſſes, Narcotics and Tonics, with their ſubordinate diviſions of Antiſpaſmodics and Aſtringents, both conſiſting of powerful ſtimulants; the one diffuſible and tranſient, the other ſlow and permanent in their operation.

II. There is a difference between ſtimulants, in their actions being directed to particular parts. Some, when received into the ſtomach, quickly act upon the general ſyſtem; others have their action confined to the ſtomach itſelf, or, at leaſt, any farther ſtimulant effect they may occaſion is ſlow and inconſiderable; while a third claſs conſiſts of thoſe which operate on one part, often without producing any ſenſible effect on the ſtomach or general ſyſtem. Some thus act on the inteſtinal canal; others on the kidneys, bladder, veſſels of the ſkin, and other parts; the affection they excite in theſe, being the conſequence, not of any ſtimulant operation equally extended over every part, but of one more particularly determined. This difference in the action of ſtimuli is the principal foundation of the diſtinctions of medicines into particular claſſes. Cathartics, for inſtance, are thoſe medicines, which, as ſtimuli, act peculiarly on the inteſtinal canal: Diuretics, thoſe which act on the ſecreting veſſels of the kidneys: Emmenagogues, thoſe which act on the uterine ſyſtem: Diaphoretics, thoſe which exert a ſtimulant action on the veſſels of the ſkin. With theſe operations, medicines, at the ſame time, act more or leſs as general ſtimulants, by which each individual belonging to any claſs is thus rendered capable of producing peculiar effects; and many of them, by a peculiarity of conſtitution in the patient, or from the mode in which they are adminiſtered, frequently act on more than one part of the ſyſtem, by which their effects are ſtill farther diverſified. Medicines, when thus determined to particular parts, are ſometimes conveyed to theſe parts in the courſe of the circulation; more generally their action is extended from the ſtomach, or part to which they are applied, by the medium of the nervous ſyſtem.

III. Medicines, beſides acting as ſtimuli, ſometimes occaſion mechanical or chemical changes in the ſtate of the fluids or ſolids, by which their action is more or leſs diverſified. Theſe operations of medicines were formerly ſuppoſed to be more extenſive than they really are; and many abſurd explanations were deduced from the ſuppoſed changes which the ſolids and fluids underwent in diſeaſe. Though theſe notions are now exploded, it muſt ſtill be admitted that changes of this kind take place in the living ſyſtem. Chemical changes in particular, there is reaſon to believe, very frequently modify the actions of remedies; and ſome very obvious operations of this kind, as well as others of a mechanical nature, ſerve as diſtinctions for eſtabliſhing ſeveral particular claſſes.

Theſe obſervations point out the principles on which the arrangement of the articles of the Materia Medica, from their medicinal operations, may be eſtabliſhed.

Thoſe ſtimulants, which exert a general action on the ſyſtem, may firſt be conſidered. Of theſe there are two well marked ſubdiviſions, the Diffuſible and the Permanent; the former correſponding to the uſual claſſes of Narcotics and Antiſpaſmodics; the latter, including likewiſe two claſſes, Tonics and Aſtringents. In theſe there is a gradual tranſition paſſing into the one from the other, from the moſt diffuſible and leaſt durable ſtimulus, to the one moſt ſlow and permanent in its action.

The next general diviſion is that comprizing local ſtimulants; ſuch are the claſſes of Emetics, Cathartics, Emmenagogues, Diuretics, Diaphoretics, Expectorants, Sialagogues, Errhines, and Epiſpaſtics. Theſe all occaſion evacuation of one kind or another, and their effects are in general to be aſcribed, not to any operation exerted on the whole ſyſtem, but to changes of action induced in particular parts.

After theſe, thoſe few medicines may be conſidered whoſe action is merely mechanical or chemical. To the former belong Diluents, Demulcents and Emollients. Anthelmentics may perhaps be referred with propriety to the ſame diviſion. To the latter, or thoſe which act chemically, belong Antacids or Abſorbents, Lithontriptics, Eſcharotics, and perhaps Refrigerants.

Under theſe claſſes may be comprehended all thoſe ſubſtances capable of producing ſalutary changes in the human ſyſtem. Several claſſes are indeed excluded which have ſometimes been admitted; but theſe have been rejected, either as not being ſufficiently preciſe or comprehenſive, or as being eſtabliſhed only on erroneous theory.

The ſubdiviſions of theſe claſſes may ſometimes be eſtabliſhed on the natural affinities exiſting among the ſubſtances arranged under each; on their chemical compoſition; their reſemblance in ſenſible qualities; or, laſtly, on diſtinctions in their medicinal virtues, more minute than thoſe which form the characters of the claſs. In different claſſes one of theſe methods will frequently be found preferable to any of the others.

## TABLE OF CLASSIFICATION.

| | | |
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| A. General Stimulants. | | |
| | a. Diffuſible. | Narcotics.<br>Antiſpaſmodics. |
| | b. Permanent. | Tonics.<br>Aſtringents. |
| B. Local Stimulants. | | Emetics. |
| | | Cathartics. |
| | | Emmenagogues. |
| | | Diuretics. |
| | | Diaphoretics. |
| | | Expectorants. |
| | | Sialagogues. |
| | | Errhines. |
| | | Epiſpaſtics. |
| C. Chemical Remedies. | | Refrigerants. |
| | | Antacids. |
| | | Lithontriptics. |
| | | Eſcharotics. |
| D. Mechanical Remedies. | | Anthelmintics. |
| | | Demulcents. |
| | | Diluents. |
| | | Emollients. |

Class

## Class I.—NARCOTICS.

The firſt diviſion of the preceding claſſification, is that comprehending thoſe ſtimulants, the action of which is general over the ſyſtem. The firſt claſs of this diviſion comprizes thoſe which are highly diffuſible, and at the ſame time tranſient in their operation. This correſponds with the common claſs of Narcotics or Sedatives, uſually defined, Such ſubſtances as diminiſh the actions and powers of the ſyſtem, without occaſioning any ſenſible evacuation. The definition is imperfect, as it does not include that ſtimulant operation which it is acknowledged they equally produce.

When given in a moderate doſe, Narcotics excite the functions both of body and mind: the force and frequency of the pulſe are increaſed, muſcular action is more vigorous, and hilarity or intoxication are induced. Theſe ſymptoms,

toms, after continuing for ſome time, are ſucceeded by thoſe of diminiſhed action: the pulſe becomes ſlower, is full and ſoft, the body is leſs ſenſible to impreſſions, and leſs capable of voluntary exertion, and the mind is inactive. This ſtate terminates in ſleep. When it ceaſes, there remains a degree of general debility, marked by ſickneſs, tremor and oppreſſion. By a large doſe, debility, without previous excitement, is occaſioned, and the conſequences of an immoderate quantity are delirium, paralyſis, coma, and convulſions, ſometimes terminating in death. Theſe are the general effects, conſiderably diverſified, however, as ariſing from different narcotics, and varied by other circumſtances. Habitual uſe conſiderably diminiſhes their power.

Theſe medicines act primarily on the ſtomach, whence their action is conveyed by nervous communication to the general ſyſtem. Externally applied, they exert their uſual action, though with leſs force. Directly applied to the muſcles of animals, they firſt ſtimulate them to contraction, but ultimately exhauſt their irritability.

As the medicines belonging to this claſs diminiſh the actions of the ſyſtem, when given even in ſmall doſes, their primary operation was generally conſidered as of a depreſſing kind; and the ſtimulant effects which occaſionally appeared to be produced by their exhibition, were aſcribed to what was termed the reaction of the ſyſtem, or the exertion of that ſalutary power ſuppoſed to belong to the living body, by which every noxious application is reſiſted and thrown off. They were therefore conſidered as *directly* ſedative, and *indirectly* ſtimulant.

Preciſely the reverſe of this doctrine was likewiſe advanced. As their exciting effects were thoſe which appeared firſt, and were ſucceeded by thoſe of debility, and as the firſt were produced from a ſmall doſe, while the others were occaſioned when the doſe was comparatively large, theſe ſubſtances were regarded as direct ſtimulants, capable of exciting the actions of the ſyſtem; and the ſymptoms of debility which they ſo frequently produced, were conſidered as ariſing from that exhauſtion of power, which, according to a general law of the ſyſtem, always follows increaſed action ſuddenly raiſed and not kept up. They were regarded, therefore, as *directly* ſtimulant, and *indirectly* ſedative, and the peculiarities of their action were aſcribed to their rapid and tranſient ſtimulant operation.

If, in inveſtigating this ſubject, we merely contraſt theſe two theories, little doubt can remain of the ſuperiority of the latter. The ſuppoſitions of there being a power in the living ſyſtem, fitted to reſiſt any noxious agent, and of ſuch a power acting before the deleterious effects have taken place, and thus retarding or preventing their production, are improbable, and unſupported by any ſatisfactory proof. Since the ſtimulant operation of Narcotics always precedes the ſymptoms of languor and debility which they produce ; it is the direct concluſion, that theſe latter are the conſequences of the former. The analogy between Narcotics and other ſubſtances, admitted to be ſtimulants, but which are leſs rapid in their operation, is alſo in many reſpects ſo direct, as to prove ſimilarity of action. And their utility in ſeveral diſeaſes, in which they are employed as ſtimulants, is ſcarcely conſiſtent with the opinion, that they poſſeſs

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real depreſſing power. Some doubt, however, s ſtill attached to the theory that they are diect ſtimulants, from the fact, undoubtedly true, hat the ſedative effects of Narcotics are frequently diſproportioned to their previous ſtimuant operation, allowing even in ſuch caſes, for its rapidity and little permanence; and the propoſition, though apparently ſomewhat paradoxical, is perhaps juſt, that theſe ſubſtances are at once capable of ſtimulating the living fibre, and, independent of that ſtimulant operation, exhauſt to a greater or leſs extent, by *direct* operation, the living power. The effects of certain chemical agents on the living ſyſtem, as lately aſcertained, appear to ſupport ſome concluſion of this kind.

Narcotics being capable of producing either ſtimulant or ſedative effects, may be practically employed with very different intentions. Either operation is obtained chiefly by certain modes of adminiſtration. If given in ſmall doſes, frequently repeated, the actions of the ſyſtem are excited, and kept up. But if given in larger doſes, at diſtant intervals, the ſtate of diminiſhed action and leſſened ſenſibility is obtained.

tained. As ſtimulants, they are employed in various diſeaſes of debility; in intermittent fever, and continued fevers of the typhoid type; in gout, hyſteria, &c. As ſedatives, they are uſed to allay pain and irritation, to procure ſleep, and diminiſh ſecretions; hence their applications in ſpaſmodic and painful diſeaſes, in hæmorrhagies and increaſed diſcharges. In an inflammatory ſtate of the ſyſtem, the uſe of ſome of them is not altogether without danger from their ſtimulating effects.

# NARCOTICS.

ALKOHOL.
ETHER.
CAMPHOR.
PAPAVER SOMNIFERUM.
HYOSCYAMUS NIGER.
ATROPA BELLADONA.
ACONITUM NAPELLUS.
CONIUM MACULATUM.
DIGITALIS PURPUREA.
NICOTIANA TABACUM.
LACTUCA VIROSA.
DATURA STRAMONIUM.
RHODODENDRON CHRYSANTHUM.
RHUS TOXICODENDRON.
ARNICA MONTANA.
STRYCHNOS NUX VOMICA.
PRUNUS LAURO-CERASUS.

ALKOHOL. *Ardent Spirit. Spirit of Wine.*

THIS fluid is formed, by the proceſs of fermentation, from ſweet vegetable juices, or ſolutions of ſaccharine matter in water. During the fermentation, the ſaccharine matter ſuffers decompoſition. Part of its oxygen combines with part of its carbon, and forms carbonic acid, which is diſengaged; the remaining carbon and oxygen unite with the hydrogen of the ſugar, and form the alkohol, which is the only other product of the fermentation.

The alkohol thus formed remains diluted with much water, and combined with ſaccharine and extractive matter, conſtituting the vinous or fermented liquors, which, from variations of compoſition, differ from each other in ſeveral of their qualities, but which agree in the poſſeſſion of certain properties, depending on the quantity of alkohol they contain.

From theſe liquors the alkohol is obtained by diſtillation. It paſſes over diluted with water, and impregnated with an oily matter derived from the fermented liquor. In this manner the different ſpiritous liquors of commerce are formed.

ed. From theſe the alkohol may be obtained pure by repeated diſtillations. When malt ſpirit is uſed, the rectification of the alkohol is facilitated, by adding to the ſpirit, previous to its diſtillation, one-ſixteenth of its weight of dried ſub-carbonat of potaſh, and again diſtilling it with the addition of a ſmall quantity of alum.

Alkohol, obtained by ſuch a proceſs, is a colourleſs tranſparent fluid, fragrant and pungent: its ſpecific gravity, when pure, is 8200 in its uſual ſtate; when its ſpecific gravity is 8350, it contains 5 of water in the 100. It is highly volatile and inflammable, and yields, by its combuſtion, water and carbonic acid. It combines with water in every proportion, and is the proper ſolvent of reſin, balſam, camphor, and eſſential oil.

Alkohol is a powerful diffuſible ſtimulus: its ſtimulant power being greater or more permanent, proportioned to its ſedative quality, than perhaps any of the other Narcotics. In a moderate doſe, it produces a ſtate of high excitement both of body and mind, which is followed by proportional languor: in a larger doſe, it occaſions more violent effects,—intoxication, delirium, ſtupor, coma, and death.

Alkohol is ſcarcely employed in medicine in its pure ſtate, but extenſively under the form of vinous and ſpiritous liquors. Theſe afford our moſt powerful ſtimulants. Wines ſeem more permanent in their ſtimulant operations than ardent ſpirits; hence they are ſuperior in tonic power, though inferior in producing a ſudden ſtimulus.

Both are uſed with advantage in many diſeaſes of debility, eſpecially thoſe of the febrile kind, the general rules being obſerved in their exhibition which have been already noticed under Narcotics in general. From its comparatively ſtrong and permanent ſtimulant operation, alkohol cannot be employed as an anodyne.

From the long-continued uſe of alkohol, many diſeaſes derive their origin, as dyſpepſia, hypochondriaſis, and viſceral obſtructions occaſioning dropſy. Theſe may be aſcribed to the exertion of its ſtimulant power, by which the irritability of the ſtomach and other viſcera is worn out, and indirect debility produced.

Alkohol is uſed externally as a ſtimulant in muſcular pains: it is one of the beſt applications to burns; and it is uſed with advantage to reſtrain hæmorrhage.

In pharmacy, it is employed as the ſolvent of the active matter of many vegetable, and ſome animal productions. Diluted with an equal weight of water, it forms Proof Spirit, (*alkohol dilutum*), which is alſo extenſively uſed as a menſtruum.

## ETHER. *Ether.*

THIS ſubſtance is the product of the action of acids upon alkohol; it differs from alkohol principally in containing more hydrogen, though the different ethers, as produced by the different acids, vary in their compoſition and properties. They are the lighteſt and moſt volatile of all known fluids, and are highly inflammable; their ſmell is fragrant, and taſte pungent.

In their medicinal powers, the ethers reſemble alkohol; but they are rather leſs permanent in their action. They are uſed principally to alleviate or remove ſpaſmodic action, and hence are exhibited with much advantage in aſthma, hyſteria and other ſpaſmodic diſeaſes. Sulphuric ether, or that obtained from the action of ſulphuric acid on alkohol, is principally uſed; its doſe is from half a drachm to one drachm; and as its operation is ſudden and tranſient, it requires to be frequently repeated. Externally applied, it relieves ſpaſmodic contractions of the muſcles, and is uſed as an application to burns.

CAMPHORA. Camphor. Laurus Camphora, Lin. *Cl. Enneandria. Ord. Monogynia. Nat. Ord. Oleraceæ. Habitat, Japan, India.*

CAMPHOR is a proximate principle of vegetables, contained in many plants, eſpecially thoſe of the aromatic kind. For the purpoſes of commerce, it is obtained from a ſpecies of laurel, the Laurus Camphora, a native of Japan. It exiſts in diſtinct grains in the wood of the root and branches of this tree. It is extracted by ſublimation; in Europe, it is purified by a ſecond ſublimation, with the addition of one-twentieth of its weight of lime.

Pure camphor is colourleſs, ſemi-tranſparent, tenacious, and ſomewhat unctuous to the touch;

its ſmell is ſtrong and fragrant; its taſte pungent and bitter. It is volatile at every natural temperature; is fuſible in a heat inferior to 212°; is inflammable; ſcarcely ſoluble in water, but entirely ſoluble in alkohol, ether, and oils, eſſential or expreſſed. It conſiſts of carbon and hydrogen, and differs from the eſſential oils, in containing a larger proportion of carbon, with ſome oxygen. By combuſtion, it affords carbonic and camphoric acids.

In a moderate doſe, camphor produces effects ſimilar to thoſe of other narcotics. Its ſtimulant operation, however, is not conſiderable, even in a ſmall doſe; and in a large doſe it always diminiſhes the force of the circulation; induces ſleep, and ſometimes cauſes delirium, vertigo and convulſions, ending in total inſenſibility.

As a ſtimulant, camphor has been uſed in typhus, cynanche maligna, confluent ſmall-pox, and other febrile affections accompanied with debility, in retrocedent gout, and to check the progreſs of gangrene. As a ſedative, it is uſed in affections of an oppoſite nature, as in pneumonia, rheumatiſm, and gonorrhœa, combined with nitre or antimonials, or by itſelf, where evacuations have been made. In mania, it has ſometimes ſucceeded as an anodyne: as an antiſpaſmodic, it has been employed with advantage in aſthma, chorea, and epilepſy.

The doſe of camphor is from 5 to 20 grains. It cannot be given with ſafety in a larger doſe than half a drachm; and Dr Cullen has likewiſe remarked, that in too ſmall a doſe, as that of a few grains, it has very little effect. In divided doſes, it may be given to the extent of a drachm or more in the day. Its power of checking the progreſs of gangrene is promoted by combination with muſk, or carbonat of ammonia: combined with opium, it forms a powerful diaphoretic; and its efficacy in inflammatory diſeaſes is augmented by antimonials.

Camphor ought generally to be given in a ſtate of mixture in ſome fluid form, as being then leſs apt to excite nauſea. It may be diffuſed in water by trituration with ſugar, mucilage, or almonds. To reduce it previouſly to powder, a few drops of alkohol muſt be added. Magneſia, by being triturated with it, has the effect of dividing and rendering it ſmooth, and may be uſed for its ſuſpenſion; a number of the gum-reſins alſo act on it in ſuch a manner, that, from their mixture, a ſoft uniform maſs is formed, and this affords another mode of diffuſing it in water.

Externally applied, camphor is uſed as an anodyne in rheumatiſm and muſcular pains, and as a diſcutient in bruiſes and inflammatory affections; it is diſſolved in alkohol or expreſſed oil, and applied by friction to the part. Added to collyria, or mixed with lard, it is of ſervice in ophthalmia. Suſpended in oil, it is uſed as an injection in ardor urinæ, and as an enema to relieve the uneaſy ſenſations occaſioned by aſcarides. The combination of it with opium is uſeful as a local application in toothach.

Officinal Preparations.—Acid: Acetos: Camph. Emuls: Camph. Ol: Camph. Tinct: Camph. *Ed.*—Miſt: Camph. Lin: Camph: Comp. Tinct: Opii Camph. *Lond.*

Papaver somniferum. Poppy. *Polyand. Monogyn. Rhœad. Capſula et Succus ſpiſſat. Europe, Aſia.*

The capſule of this plant, by inciſion through its cortical part, affords a milky juice, which, by expoſure to the ſun and air, becomes concrete,

crete, and of a brown colour. This is termed Opium, and is the production of the plant that is chiefly medicinally employed. The leaves and ſtalks are inferior in narcotic power; the ſeeds are inert.

Opium is ſoft and tenacious, of a dark red or brown colour, having a ſtrong fœtid odour, and a nauſeous acrid taſte; it burns with a bright flame. It is uſually imported from Egypt, Turkey and the Eaſt Indies. Its compoſition is not perhaps well aſcertained. It is ſuppoſed to conſiſt principally of gum and reſin, in the proportions of about 4½ of each in 12 parts of the crude opium. The bitterneſs is ſaid to reſide in the gum; the aſtringency, flavour, and narcotic quality, in the reſin. It affords a volatile principle; water diſtilled from it having its nauſeous taſte and ſmell, but none of its narcotic quality. It contains alſo ſome ſaline matter, and a ſubſtance inſoluble either in alkohol or water.

From its analyſis may be eſtimated the effects of different ſolvents upon it. Alkohol, and proof ſpirit diſſolving its reſin, afford tinctures poſſeſſing all its virtues. Water diſſolves its gummy part, which is much leſs active, but a part of the reſin is at the ſame time taken up by the medium of the gum. Wines alſo afford ſolutions poſſeſſing the virtues of opium. Vinegar diſſolves its active matter, but greatly impairs its power.

Opium was once ſuppoſed to act excluſively on the blood; but numerous facts and experiments have ſhewn, that its action is on the living ſolids, and that that action is propagated and diffuſed by the medium of the nervous ſyſtem.

As to the nature of that action, its effects prove it to be a direct and highly diffuſible ſtimulant. In a moderate doſe, it increaſes the frequency, force, and fulneſs of the pulſe; augments the temperature, and gives vigour to every function of the body and mind, occaſioning often intoxication and delirium. Theſe are ſucceeded by diminution of the force and frequency of the pulſe, by laſſitude, impaired ſenſibility and ſleep. The firſt ſymptoms are merely thoſe of increaſed action from the ſtimulant power of the opium; thoſe that ſucceed are conſidered as the conſequences of this. It muſt be allowed, however, that they are diſproportioned to the preceding excitement, or to an equal or greater excitement produced by other ſtimulants, as by alkohol; and hence ariſes the ſuperiority of opium as an anodyne and ſedative. This has been aſcribed to the greater diffuſibility of its operation, in which it has been proved by direct experiments to ſurpaſs every other ſtimulant, but which is perhaps ſcarcely adequate to explain its peculiar effects.

If a larger doſe of opium be given, the ſymptoms of diminiſhed action appear without any previous excitement, and are even followed by delirium, ſtupor, deep and difficult breathing, convulſions and death.

From its topical application, ſimilar effects are produced: at firſt, increaſe of pain, augmented muſcular contraction, increaſed heat, and even inflammation, which are more or leſs quickly ſucceeded by a greater inſenſibility to impreſſions, and a greater difficulty of being excited to contraction by the application of other ſtimuli. The latter ſymptoms are alſo immediately induced by the application of a large doſe.

Theſe phenomena, it is obvious, admit of a ſimilar explanation.

The action of opium on the ſyſtem in a diſeaſed ſtate is preciſely ſimilar. In typhus and other diſeaſes of debility, its exhibition in a moderate doſe produces all the ſalutary effects reſulting from the adminiſtration of wine and other powerful ſtimulants, while in diſeaſes of an oppoſite type, where there is already increaſed action, it is not leſs prejudicial.

After thus conſidering the action of opium, it may be obſerved with reſpect to it, (and the obſervation extends to narcotics in general), that whether it be conſidered as a powerful ſtimulant, as a direct ſedative, or as poſſeſſing both powers, the practical application of it is nearly the ſame; ſince all admit that it may be exhibited ſo as to obtain from it ſtimulant and alſo debilitating effects, and that the former are primary effects, and are obtained from it in a moderate doſe, while the latter are ſecondary, and are only produced by a larger doſe. Although, therefore, the explanation of the mode of operation be different, there is no diſpute as to the operation itſelf, or the effects it produces.

The principal indications which opium is capable of fulfilling, are, ſupporting the actions of the ſyſtem, allaying pain and irritation, relieving ſpaſmodic action, inducing ſleep, and checking morbidly increaſed ſecretions. It is differently adminiſtered, as it is deſigned to fulfil one or other of theſe indications.

Where opium is given as a ſtimulus, it ought to be adminiſtered in ſmall doſes, frequently repeated, and ſlowly increaſed, as by this mode the excitement it produces is beſt kept up. But where the deſign is to mitigate pain or irritation, or the ſymptoms ariſing from theſe, it ought to be given in a full doſe, and at diſtant intervals, by which the ſtate of diminiſhed power and ſenſibility is moſt completely induced.

One other general rule with reſpect to the adminiſtration of opium, is, that it ought not to be given in any pure inflammatory affection, at leaſt till evacuations have been uſed, or unleſs means are employed to determine it to the ſurface, and produce diaphoreſis.

In continued fevers, not of the pure inflammatory kind, opium is adminiſtered ſometimes as a general ſtimulus, and at other times to allay irritation.

ation. The great practical rule in ſuch caſes s, that it ought to be given in ſuch quantities nly, that the pulſe becomes ſlower and fuller rom its operation. Its exhibition is improper where local inflammation, eſpecially of the brain or of its membranes, exiſts.

In intermittent fever, the exhibition of an opiate renders the paroxyſm milder, and facilitates the cure.

In the greater number of the Profluviæ, catarrh, diarrhœa, cholera, opium is employed to leſſen the diſcharge, and is frequently the principal remedy in effecting the cure. In paſſive hæmorrhagy, it proves uſeful by its ſtimulant power. In retrocedent gout it is uſed as a powerful ſtimulant.

In convulſive and ſpaſmodic diſeaſes, it is advantageouſly adminiſtered, with the view of relieving ſymptoms, or even of affecting a permanent cure, and in ſeveral of them it requires to be given to a very great extent.

In lues venerea it promotes the action of mercury, and relieves the irritation ariſing either from that remedy, or from the diſeaſe.

It is often given to promote healthy ſuppuration, and is a principal remedy in arreſting the progreſs of gangrene.

Externally applied, opium alleviates pain, and relieves ſpaſmodic action. Hence the utility of it in colic, in tetanus, in toothach, &c. In the form of enema, it is of ſingular efficacy in teneſmus, and it is applied under the ſame form in other diſeaſes, where its adminiſtration by the mouth is inconvenient or impracticable.

The watery ſolution of it is uſed as an application in various ſuperficial inflammations.

The uſual doſe of opium is one grain. Where it has been habitually uſed, a larger quantity is neceſſary; and in ſeveral diſeaſes, as mania, hydrophobia, or tetanus, it alſo requires to be given in much larger doſes.

Where opium has been taken in ſuch quantities as to produce dangerous conſequences, the contents of the ſtomach are firſt to be evacuated by a powerful emetic, as a ſolution of ſulphat of zinc. Large draughts of vinegar, or any of the native vegetable acids, are then to be ſwallowed, which ſeem to operate by affording oxygen to the ſtomach. Moderate doſes of brandy, or a ſtrong infuſion of coffee, have alſo been found uſeful.

*Offic. Prep.*—Elect: Opiat. Pil: Opiat. Pulv: Opiat. Pulv: Ipecac: cum opio. Tinctura Opii. Tinct: Opii Ammoniatæ. Tinct: Saponis cum opio. Troch: Glycirrhiz: cum opio. *Ed.*—Opium Purific. Tinct: Opii Camph. *Lond.*—Extr: Opii. Syrup: Opii. *Dub.*

The dried capſule of the poppy is ſometimes employed in preference to opium itſelf. Its active matter is extracted by decoction with water, and this made into a ſyrup, by boiling with ſugar, is uſed as an anodyne. It is a weak preparation, and is in general only given to children. The doſe to a child a year old is one drachm. A ſyrup made from opium is to be preferred, as the doſe can be regulated with much more certainty. An infuſion of the capſules is uſed as an anodyne fomentation.

*Offic. Prep.*—Extr: Papav: alb. Syr: Papav: ſomnif. *Ed.*

Hyoscyamus niger. Black Henbane. *Pentand. Monog. Solanac. Herba, Semen. Indigenous.*

The leaves of this plant, when recent, have a ſlightly fœtid ſmell, and a mucilaginous taſte; when dried, they loſe both taſte and ſmell, and part alſo of their narcotic power. The root poſſeſſes the ſame qualities as the leaves, and even in a more eminent degree.

Henbane reſembles opium in its action more than any other narcotic does. In a moderate doſe, it increaſes at firſt the ſtrength of the pulſe, and occaſions ſome ſenſe of heat, which are followed by diminiſhed ſenſibility and motion; in ſome caſes by thirſt, ſickneſs, ſtupor, and dimneſs of viſion. In a larger quantity, it occaſions profound ſleep, hard pulſe, and ſometimes fierce delirium, ending in coma or convulſions, with a remarkable dilatation of the pupil, diſtortion of the countenance, a weak tremulous pulſe, and eruption of petechiæ. On diſſection, gangrenous ſpots have been found on the internal ſurface of the ſtomach. Its baneful effects are beſt counteracted by a powerful emetic, and by drinking largely of the vegetable acids.

Henbane has been uſed in various ſpaſmodic nd painful diſeaſes, as in epilepſy, hyſteria, alpitation, headach, paralyſis, mania and ſcirhus. It is given in the form of the inſpiſſated uice of the freſh leaves, the doſe of which is rom one to two grains, which requires to be radually increaſed. It is ſometimes employed s a ſubſtitute for opium, where the latter, from dioſyncraſy, occaſions any diſagreeable ſympom. The henbane alſo is free from the conſtiating quality of the opium.

*Offic. Prep.*—Succ: ſpiſſ: Hyoſc: N. Tinct: yoſc: N. *Ed.*

TROPA BELLADONNA. Deadly Nightſhade. *Pentand. Monogyn. Solanaceæ. Folia. Indigenous.*

THE leaves have ſcarcely any ſmell, and only ſlightly nauſeous, ſub-acrid taſte. The berries e ſweetiſh. Both are narcotic, as is alſo the ot. In a moderate doſe, belladonna occaſions a nſe of warmth, followed by diaphoreſis, and a ſpoſition to ſleep, frequently with ſickneſs and rtigo; in a large doſe, ſymptoms of intoxicaon, intolerable thirſt, dilatation of the pupils, w and feeble pulſe, convulſions and paralyſis.

On diſſection, the ſtomach and inteſtines are found inflamed.

Belladonna was firſt employed as an external application, in the form of fomentation, to ſcirrhus and cancer. It was afterwards adminiſtered internally in the ſame affections; in caſes of extenſive ulceration, in paralyſis, chronic rheumatiſm, amauroſis, and various diſeaſes of the nervous kind. Its effects, however, have been ſo ſeldom permanently beneficial, that it is now rarely uſed. Its doſe is from one to three grains of the powdered dried leaves, or one grain of the inſpiſſated juice.

*Offic. Prep.*—Succ: Spiſſ: Atrop: Bellad. *Ed.*

ACONITUM NAPELLUS. Aconite, Monk's-hood, or Wolfſbane. *Polyand. Trigyn. Multiſiliquæ. Herba. Europe, America.*

THE ſmell of the leaves of aconite, when recent, is narcotic, but is loſt by drying. Their taſte is ſub-acrid. In a moderate doſe its effects are thoſe of a narcotic, with ſlight diaphoreſis; in a larger doſe it occaſions vertigo, ſyncope, and convulſions.

Aconite was employed by Störck in obſtinate chronic rheumatiſm, exoſtoſis, paralyſis, ulceration, and ſcirrhus. By other practitioners, it has more particularly been found uſeful in the firſt of theſe diſeaſes. Its doſe is from one to two grains of the powdered dried leaves; of the inſpiſſated juice half a grain.

*Offic. Prep.*—Succ: Spiſſ: Aconit: Napell. *Ed.*

CONIUM MACULATUM. Cicuta. Hemlock. *Pentand. Digyn. Umbellatæ. Folia, Semen. Indigenous.*

THE ſtalk of hemlock is large and ſpotted; the leaves are of a dark-green colour, have a faint diſagreeable ſmell, and a nauſeous herbaceous taſte. The ſeeds are inferior in ſtrength.

Hemlock is a very powerful narcotic. In a very moderate doſe it is apt to occaſion ſickneſs and vertigo; in a larger quantity it induces anxiety, dilatation of the pupils, delirium, ſtupor, and convulſions.

The free internal uſe of this plant was introduced by Störck. He recommended it particularly in ſcirrhus and in cancerous ſores, in which it received a very extenſive trial. While its inefficacy towards effecting a radical cure is eſtabliſhed, its utility as a palliative is admitted. It has likewiſe been found ſerviceable in ſcrofulous and venereal ulcerations, glandular tumors, chronic rheumatiſm, and ſeveral other diſeaſes. The doſe is two or three grains of the powdered leaves, one or two grains of the inſpiſſated juice. It requires to be increaſed, in general, to a very conſiderable extent: at the ſame time, this muſt be done with caution, as both the dried leaves and inſpiſſated juice are variable in their ſtrength. The dried leaves are leſs liable to injury from keeping than the inſpiſſated juice. The drying ſhould be performed quickly before a fire, and the powder ſhould be kept in phials cloſely ſtopped and ſecluded from the light. The proof of the drying having been properly performed, is the powder retaining the odour of the leaves, and the deepneſs and freſhneſs of their colour.

*Offic. Prep.*—Succ: ſpiſſ: Conii Macul. *Ed.*

DIGITALIS PURPUREA. Foxglove. *Didynam. Angioſperm. Solanac. Folia. Indigenous.*

THE leaves of Digitalis have a bitter taſte, with ſcarcely any odour. When properly dried, their colour is a lively green. They ought to be collected when the plant begins to bloſſom, to be dried quickly before a fire, and preſerved unpowdered.

Of all the narcotics, Digitalis is that which diminiſhes moſt powerfully the actions of the ſyſtem; and it does ſo without occaſioning any previous excitement. Even in the moſt moderate doſe it diminiſhes the force and frequency of the pulſe, and in a large doſe reduces it to a great extent, as from 70 beats to 40 or 35 in a minute, occaſioning, at the ſame time ~~time~~, vertigo, indiſtinct viſion, violent and durable ſickneſs, with vomiting. In a ſtill larger quantity it induces convulſions, coldneſs of the body, and inſenſibility, ſymptoms which have ſometimes terminated fatally. Beſides its narcotic effects, digitalis acts peculiarly on the abſorbent ſyſtem: by increaſing abſorption, it proves a powerful diuretic.

As a narcotic, foxglove has been recommended in epilepſy, inſanity, and in ſome acute inflammatory diſeaſes. Lately, it has been very extenſively employed in phthiſis, and the beneficial effects which it produces in that diſeaſe are probably owing to its narcotic power, by which it reduces the force of the circulation through the lungs and general ſyſtem. It is adminiſtered ſo as to produce this effect. One grain of the powdered leaves, or ten drops of the ſaturated tincture, may be given night and morning. This doſe is increaſed one-half every ſecond day, till its action on the ſyſtem becomes apparent. As ſoon as the pulſe begins to be diminiſhed, the increaſe of doſe muſt be made with more caution; and whenever nauſea is induced, it ought rather to be reduced, or, if neceſſary, intermitted for a ſhort time. If the ſickneſs become urgent, it is beſt relieved by ſtimulants, particularly ſmall doſes of brandy with aromatics. The tincture has been ſuppoſed to be the beſt form of adminiſtering digitalis, when the remedy is deſigned to act as a narcotic: it is alſo more manageable in its doſe, and more uniform in its ſtrength, than the dried leaves.

The uſe of digitalis as a diuretic is to be afterwards noticed.

*Offic. Prep.*—Inf: Digit: P. T: Digit: P. *Ed.*

NICOTIANA TABACUM. Tobacco. *Pentand. Monogyn. Solanac. Folia. America.*

THE taſte of tobacco is extremely bitter and acrid; its ſmell is fœtid and narcotic. It burns with a ſparkling flame, from a quantity of nitrat of potaſh which it contains. Its active matter is diſſolved both by water and alkohol; by decoction its powers are much impaired.

The effects of tobacco are thoſe of a powerful narcotic. Alongſt with ſevere nauſea and vomiting, it reduces the force of the circulation, and occaſions extreme muſcular debility, with inſenſibility and cold ſweats. It has likewiſe ſome power as a diuretic, probably from promoting abſorption.

As a diffuſible ſtimulant, the ſmoke of tobacco thrown into the inteſtines, was at one time employed in the recovery of drowned perſons, a practice now exploded as pernicious. It is employed with more advantage in ileus and incarcerated hernia, though it requires to be managed with much caution. The watery infuſion, of the ſtrength of two drachms of the tobacco to one pound of water, is a more convenient mode of exhibiting it, as an enema. The ſmoke received into the mouth relieves the pain of toothach by its narcotic power, or by exciting a profuſe ſalivary diſcharge.

*Off. Prep.*—Vin: Nicot: T. *Ed.*

LACTUCA VIROSA. Strong-ſcented Lettuce. *Syngenes. Polygam. æqual. Compoſitæ. Folia. Indigenous.*

THE leaves of this plant have a ſtrong fœtid ſmell, ſimilar to opium, and yield a white juice, in which their activity reſides. Their taſte is bitter and acrid. It poſſeſſes a narcotic power, but has been uſed principally as a diuretic in dropſy, in the form of the inſpiſſated juice. The doſe is 5 or 10 grains, which is gradually increaſed to 1 or 2 drachms in twenty-four hours. It has been recommended alſo in palpitation, and in intermittent fever.

*Off. Prep.*—Succ: Spiſſ: Lact: Vir. *Ed.*

DATURA STRAMONIUM. Thorn-Apple. *Pentand. Monog. Solanac. Herba. Indigenous.*

THE leaves have a narcotic odour, and a bitter taſte. They poſſeſs all the powers of a narcotic,

cotic, and have been recommended in convulſive diſeaſes, eſpecially in epilepſy. They have been uſed alſo in mania. The uſual form in which ſtramonium has been given, is that of the inſpiſſated expreſſed juice of the leaves. Doſe from 1 to 3 grains twice a-day.

ARNICA MONTANA. Leopards-Bane. *Syngeneſ. Polygam. ſuperf. Compoſitæ. Flores, Radix. Germany.*

THE flowers have a ſmell ſlightly fœtid, and a penetrating bitter taſte. Alongſt with narcotic effects, they excite vomiting and catharſis. They have been uſed in amauroſis, paralyſis, convulſive diſorders, gout, and rheumatiſm. Doſe, 5 grains in ſubſtance dried, or one drachm in infuſion.

The root of arnica is aromatic and tonic, and has been uſed as a ſubſtitute for Peruvian bark.

RHODODENDRON CHRYSANTHUM. Yellow flowered Rhododendron. *Decand. Monogyn. Bicornes. Folia. Siberia.*

THE leaves of this plant are deſtitute of ſmell, but have a bitter, rough and ſubacrid taſte,

which

which they communicate to water by infuſion or decoction. They are narcotic, producing in a large doſe intoxication and delirium. It has been given as a remedy in chronic rheumatiſm and gout; it frequently excites a ſenſation of creeping in the ſkin, and diaphoreſis. The form in which it is given is decoction, 2 drachms being boiled in 10 ounces of water, 1 or 2 ounces of the ſtrained liquor being given twice a-day, and gradually increaſed.

RHUS TOXICODENDRON. Poiſon Oak. *Pentand. Trigyn. Dumoſæ. Folia. North America.*

THIS plant has ſo much acrimony, that the touching of the leaves, or rubbing them on the ſkin, occaſions itching, inflammation, and deſquamation; taken internally, it excites nauſea, vertigo, and pain in the head. The dried leaves have been uſed in paralyſis, in ſome caſes with marked advantage. The doſe is half a grain twice or thrice a-day in the form of bolus, and gradually increaſed to three or four grains daily. It excites a ſenſe of heat, and irregular motions in the parts affected.

STRYCHNOS NUX VOMICA. Vomica Nut. *Pentand. Monogyn. Solanaceæ. Eaſt Indies.*

THE taſte of this kernel is extremely bitter; it has little or no ſmell, and is ſo hard that it cannot be reduced into powder by beating.

This nut is a very powerful narcotic, inducing even death by its ſedative power, as, on diſſection, no marks of inflammation, or local affection, are to be diſcovered in the ſtomach.

As a narcotic, it has ſcarcely been uſed, though it has been recommended in mania, epilepſy, hyſteria, &c. It has been given in dyſentery and intermittent fever, in a doſe of 5 grains twice a-day, but it does not poſſeſs any ſuperior medicinal powers.

PRUNUS LAURO-CERASUS. Cherry-Tree Laurel. *Icoſand. Monog. Pomaceæ. Folia. Europe.*

THE leaves of this plant have an odour ſlightly fragrant; their taſte is extremely bitter. They poſſeſs a highly narcotic quality, which is extracted by infuſion in alkohol or water, and is even brought over by diſtillation. It appears to reſemble digitalis in its action, but it has not been applied to any medicinal uſe.

## CLASS II.—ANTISPASMODICS.

THIS claſs might perhaps be conſidered as a ſubordinate diviſion of Narcotics. They have ſimilar virtues, being uſed principally to allay pain and inordinate action, and they differ only in not producing that ſtate of general inſenſibility and diminiſhed action, which ariſes from the action of narcotics. This might be ſuppoſed owing merely to a difference in power; yet there ſeems alſo to be ſomething more than this, ſince they produce no ſuch effect in any doſe, and ſince, although they are ſo much inferior to narcotics in this reſpect, they are equally powerful in repreſſing inordinate and irregular muſcular action. This difference may be explained, on the ſuppoſition that they are equally powerful ſtimulants, but are leſs diffuſible, and more durable in their action, or that they are powerful diffuſible ſtimulants, poſſeſſing little direct power of diminiſhing the excitable principle. Conſidered in this point of view, they will form an intermediate claſs between narcotics and tonics; and experience ſhews, that they partake of the properties of both; ſeveral narcotics and tonics being frequently uſed as antiſpaſmodics.

From the name given to this claſs, their effects may be eaſily underſtood. Spaſm is an irregular contraction of a muſcle; ſometimes the contraction is permanent, at other times it alternates with relaxation, but is ſtill irregular. Such medicines as obviate and remove ſuch affections, are termed Antiſpaſmodics.

Spaſm may ariſe from various cauſes. One of the moſt frequent is a ſtrong irritation continually applied; ſuch as dentition or worms. In theſe caſes, narcotics prove uſeful, by diminiſhing irritability and ſenſibility. Sometimes ſpaſm ariſes from mere debility; and the obvious means of removing this is by the uſe of tonics. Both narcotics and tonics, therefore, are occaſionally uſeful as antiſpaſmodics, ſuch as opium, camphor, and ether, in the one claſs, and zinc, mercury and Peruvian bark in the other. But there are farther ſeveral ſubſtances which cannot be with propriety referred to either of theſe claſſes, and to theſe the title of Antiſpaſmodics may be more excluſively appropriated.

# ANTISPASMODICS.

MOSCHUS.

CASTOREUM.

OLEUM ANIMALE EMPYREUMATICUM.

PETROLEUM.

AMMONIA.

FERULA ASSA FOETIDA.

SAGAPENUM.

BUBON GALBANUM.

VALERIANA OFFICINALIS.

CROCUS SATIVUS.

MELALEUCA LEUCADENDRON.

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*NARCOTICS uſed as ANTISPASMODICS.*

ETHER.

CAMPHOR.

OPIUM.

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*TONICS uſed as ANTISPASMODICS.*

CUPRUM.

ZINCUM.

HYDRARGYRUS.

CINCHONA.

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MOSCHUS. Muſk. Moſchus moſchiferus. *Cl. Mammalia. Ord. Pecora. South of Aſia.*

MUSK is a peculiar production found in a ſmall ſac ſituated in the umbilicus in the male of the above animal, a native of China, India, and Tartary. It is ſlightly unctuous, of a black colour, having a ſtrong durable ſmell, and a bitter taſte. It yields part of its active matter to water, by infuſion; by diſtillation the water is impregnated with its flavour; alkohol diſſolves it, the impurities excepted.

Muſk is an antiſpaſmodic of conſiderable power; it is adminiſtered with advantage in the greater number of ſpaſmodic diſeaſes, eſpecially in hyſteria and ſingultus, and alſo in diſeaſes of debility. In typhus, it is employed to relieve ſubſultus tendinum, and other ſymptoms of a ſpaſmodic nature. In cholera, it frequently ſtops vomiting, and, combined with ammonia, it is given to arreſt the progreſs of gangrene. Its doſe is from 6 to 20 grains, repeated, if neceſſary, every five or ſix hours. It is beſt given in the form of bolus. To children, it is given in the form of enema, and is an efficacious remedy in the convulſions ariſing from dentition.

*Offic. Prep.*—Miſt: Moſch. *Lond.*—Tinct: Moſch. *Dub.*

CASTOREUM. Caſtor. Caſtor Fiber. *Mammalia. Glires.*

CASTOR is a peculiar depoſition collected in cells near the extremity of the rectum in the beaver. It is imported from Ruſſia, and an inferior kind from New England. It is ſlightly unctuous, of a reddiſh-brown colour; has a ſtrong diſagreeable ſmell, and a bitter acrid taſte. Its active matter is diſſolved by alkohol, proof ſpirit, and partially by water; the tincture with alkohol is the leaſt nauſeous.

Caſtor is uſed as an antiſpaſmodic in hyſteria, principally in a doſe from 10 to 20 grains, or from 1 to 2 drachms of the tincture. From the experiments of Dr Alexander, it appears to be a remedy of no great power.

*Off. Prep.*—T: Caſtor. T: Caſtor: Comp. *Ed.*

OLEUM ANIMALE EMPYREUMATICUM. Empyreumatic Animal Oil.

THE freſh bones or horns of animals, when expoſed to heat in cloſe veſſels, afford, from the decompoſition principally of the gelatin they contain, an empyreumatic oil of a thick conſiſtence, black colour, and extremely fœtid ſmell. This, by repeated diſtillations, becomes thinner, nearly colourleſs and tranſparent, but remains ſtill fœtid. In this ſtate it has been uſed as an antiſpaſmodic, in a doſe of 10 or 15 drops. It is nearly diſcarded from practice.

The empyreumatic oil obtained from the decompoſition of the bitumen amber by heat (Ol. Succini) is very ſimilar in its qualities, and has been uſed for the ſame purpoſe. It is alſo ſometimes applied externally by friction as a ſtimulant in paralyſis and chronic rheumatiſm.

PETROLEUM, a bitumen of a red colour and thick conſiſtence, of a diſagreeable ſmell, and a itter acrid taſte, has been uſed as an antiſpaſ- odic and ſudorific, and externally as a ſtimu- nt in paralyſis, but at preſent is ſcarcely ever mployed.

Ammonia has been uſed as an antiſpaſmodic, rincipally under the form of the impure carbo- at obtained from the decompoſition of animal bſtances by heat, Carbonas Ammoniæ Py- o-Oleosus, formerly Sal Cornu Cervi. This onſiſts of carbonat of ammonia impregnated ith empyreumatic oil, and to the latter it has een ſuppoſed to owe part of its virtues. It as given in hyſteria in a doſe of from 5 to 5 grains. The pure ammonia diſſolved in al- ohol is uſed as a ſolvent of the active matter valerian, aſſafœtida and other antiſpaſmodics, nd is ſuppoſed to promote their operation.

erula Assafoetida. Aſſafœtida. *Pentand. Digyn. Umbellatæ. Gummi-Reſina. Perſia.*

Assafoetida is a concrete juice obtained by xudation from inciſions in the roots of the plant. is in ſmall maſſes, ſoft and adhering to each ther, yellow on the external ſurface, white within, having an extremely fœtid ſmell, and a taſte bitter and ſubacrid. It conſiſts of two-thirds of gum, and one-third of reſin, its taſte and ſmell reſiding in the reſinous part. It yields all its virtues to alkohol. Triturated with water it forms a milky-like mixture, the reſin being diffuſed by the medium of the gum. Diſtilled with water, it affords a ſmall quantity of eſſential oil.

Aſſafœtida is uſed as an antiſpaſmodic in different nervous diſeaſes, eſpecially in hyſteria, in dyſpnœa, tympanitis, pertuſſis, &c. and is ſuperior in efficacy to any of the fœtid gums. Its uſual doſe is from 5 to 20 grains, in the form of pill, or triturated with water. It is likewiſe given in the form of enema, 2 drachms being diffuſed in 8 ounces of warm milk or water; and it is ſometimes applied externally as a plaſter.

*Off.Prep.*—Alkohol Ammon: Fœtid. Emp: Aſſafœt. Pil: Aloes cum Aſſaf. Pil: Aſſafœt. Tinct: Aſſafœt. *Ed.*—Lac Aſſafœt. *Lond.*

### SAGAPENUM. *Gummi-Reſina.*

THIS gum-reſin is the produce of an unknown tree ſaid to be a native of Perſia. It is in ſmall maſſes, of a yellow colour, having a fœtid ſmell, and a pungent nauſeous taſte; is ſoluble in proof ſpirit; by diſtillation affords a ſmall quantity of eſſential oil.

Its virtues and uſes are the ſame as thoſe of aſſafœtida, to which it is much inferior in power. Doſe from 10 to 20 grains.

### BUBON GALBANUM. Galbanum. *Pentand. Digyn. Umbellatæ. Gummi-Reſina. Africa.*

GALBANUM is obtained by exudation from inciſions in the ſtem; it is in the form of an uniform tenacious maſs, of a dark brown colour, having a fœtid ſmell, and a bitter acrid taſte.

Alkohol diſſolves its reſin, in which its principal virtues reſide; proof ſpirit diſſolves it entirely, the impurities excepted. Triturated with water, it forms a milky-like fluid; by diſtillation it affords about one-twentieth of its weight of eſſential oil.

Galbanum poſſeſſes the virtues of the fœtid gums, and is uſed for the ſame purpoſes. Doſe 10 grains.

*Offic. Prep.*—Pil: Galb: Comp.—Tinct: Galban. *Lond.*

VALERIANA OFFICINALIS. Wild Valerian. *Triand. Monogyn. Aggregatæ. Radix. Indigenous.*

THE root of this plant, which is the part uſed in medicine, conſiſts of a number of ſlender fibres matted together, and attached to one head, of a brown colour, having a ſmell ſtrong and unpleaſant, and a warm bitter taſte.

Its active matter is extracted equally by water and alkohol. Its infuſion changes colour on the addition of ſulphat of iron. By diſtillation water is impregnated with its flavour, but not with its taſte. No eſſential oil is obtained.

Valerian is one of the principal modern antiſpaſmodics, and is uſed with advantage in hyſteria, chorea, epilepſy, and hemicrania. Doſe from one ſcruple to one drachm, three or four times a-day, which is increaſed gradually as far as the ſtomach can bear it.

*Offic. Prep.*—Tinct: Valer. *Lond.*—Valer: Ammon. *Lond.* et *Dub.*

CROCUS SATIVUS. Saffron. *Triand. Monogyn. Liliaceæ. Floris Stigmata. Indigenous.*

THIS ſubſtance is compoſed of the ſtigmata which crown the piſtil of the flower. Theſe are preſſed together, and form Cake Saffron. The flavour is aromatic and diffuſive, the taſte warm and bitteriſh, the colour a rich yellow. The active matter is equally extracted by alkohol, water, proof ſpirit, and vinegar; the reſiduum, which is not more than 6 parts out of 16, being inert woody matter. By diſtillation with water, a ſmall quantity of eſſential oil is obtained.

Saffron was formerly regarded as a very active medicine, and as requiring to be given with much caution. Experience has proved it to be nearly inert, and it is now baniſhed from medical practice. It is uſed as a popular remedy in the exanthemata, particularly in ſmall-pox.

*Offic. Prep.*—Tinct: Croci. *Ed.*—Syr: Croci, *Lond.*

Melaleuca Leucadendron. *Polyadelph. Polyand. Heſperideæ. Oleum Volatile. Ol. Cajeputæ. Cajeput Oil. India.*

The eſſential oil obtained by diſtillation from the leaves and fruit has a green or yellowiſh colour, a ſtrong fragrant odour, and an extremely pungent taſte. It is highly volatile.

This oil has been uſed as a highly diffuſible ſtimulant and antiſpaſmodic, in tympanitis, hyſteria, palſy, chronic rheumatiſm, and various other diſeaſes of debility. Its doſe is 3 or 4 drops. It is alſo applied externally to relieve rheumatic and gouty pains, and generally ſucceeds in relieving the pain of toothach, when applied to the affected tooth.

## Class III.—TONICS.

By Tonics, are underſtood thoſe ſubſtances whoſe primary operation is to give ſtrength to the ſyſtem. Their operation is not mechanical, as was once conceived; they act not on the ſimple ſolids, increaſing their tenſion or tone, but on the living fibre, and are merely powerful ſtimulants permanent in their operation. By producing a gradual excitement, they give vigour to the actions of the ſyſtem, and as that excitement is gradually produced, it is in like manner gradually diminiſhed, and the habitual ſtimuli continuing to operate, diminiſhed action does not ſucceed. Where tonics, however, are given in exceſs, are uſed unneceſſarily, or for too long a time, they weaken the powers of life.

Tonics act primarily on the ſtomach, the action they excite in that organ being communicated generally by the medium of the nerves to the reſt of the ſyſtem. Some of them, however, are received into the maſs of blood.

The immediate effects of a tonic given in a full doſe, are to increaſe the force of the circulation, to augment the animal heat, promote the various ſecretions, or moderate them when morbidly increaſed, quicken digeſtion, and render muſcular action more eaſy and vigorous. By ſome of them, however, theſe effects are very ſlowly induced.

The affections of the ſyſtem in which tonics are employed, muſt be obviouſly thoſe of debility; hence their uſe in the greater part of the diſeaſes to which mankind are ſubject.

This claſs may be ſubdivided into thoſe individuals derived from the Mineral, and thoſe from the Vegetable kingdoms.

# TONICS.

## *FROM THE MINERAL KINGDOM.*

HYDRARGYRUS.

FERRUM.

ZINCUM.

CUPRUM.

ARSENICUM.

BARYTES.

CALX.

ACIDUM NITRICUM.

OXY-MURIAS POTASSÆ.

## *FROM THE VEGETABLE KINGDOM.*

CINCHONA OFFICINALIS.

CINCHONA CARIBÆA.

CINCHONA FLORIBUNDA.

ANGUSTURA.

ARISTOLOCHIA SERPENTARIA.

DORSTENIA CONTRAYERVA.

CROTON ELEUTHERIA.

COLOMBA.

QUASSIA EXCELSA.

Quassia simarouba.
Swietenia febrifuga.
Swietenia mahagoni.
Gentiana lutea.
Anthemis nobilis.
Artemisia absinthium.
Chironia centaurium.
Marrubium vulgare.
Menyanthes trifoliata.
Centaurea benedicta.
Citrus aurantium.
Citrus medica.
Laurus cinnamomum.
Laurus cassia.
Canella alba.
Acorus calamus.
Amomum zingiber.
Kæmpferia rotunda.
Santalum album.
Pterocarpus santalinus.
Myristica moschata.
Caryophyllus aromaticus.
Capsicum annuum.
Piper nigrum.
Piper longum.

Piper cubeba.
Myrtus pimenta.
Amomum repens.
Carum carui.
Coriandrum sativum.
Pimpinella anisum.
Anethum foeniculum.
Anethum graveolens.
Cuminum cyminum.
Angelica archangelica.
Mentha piperita.
Mentha viridis.
Mentha pulegium.
Hyssopus officinalis.

## *Tonics from the Mineral Kingdom.*

These are in general more local in their nature than the vegetable tonics, they do not operate ſo ſpeedily, and ſeldom occaſion conſiderable excitement.

### Hydrargyrus. Argentum Vivum. Mercurius. Mercury or Quickſilver.

Mercury, though not uſually arranged under this claſs, unqueſtionably belongs to it. In the words of Dr Cullen, it acts as a ſtimulus to every ſenſible and moving fibre of the body, and it produces the moſt permanent excitement. Hence it is the moſt general evacuant belonging to the Materia Medica; and from its ſtimulant operation, its utility in many diſeaſes may be explained.

Mercury is a metal, fluid at nearly the loweſt natural temperature; it congeals at 40° below 0 of Fahrenheit's ſcale; its ſpecific gravity is

that of water as 14 to 1 ; it evaporates at
0° ; and at the ſame temperature is oxydated
expoſure to atmoſpheric air. It ſuffers the
me change at a lower temperature by agita-
on or trituration.

Quickſilver is found native, but more gene-
lly in combination with ſulphur, from which
is obtained by diſtillation, with the addition
f lime and iron. It is imported from Spain
nd Hungary. It is ſometimes adulterated with
ad and other metals ; a fraud which is detect-
d by expoſing the metal to heat in an iron
poon, when the mercury, if pure, is entirely
olatilized.

Mercury is not now uſed by itſelf in medi-
ine ; but its preparations are extenſively em-
loyed, and are very active remedies.

When rendered active by the various ſub-
tances with which it is combined in theſe pre-
arations, it is a powerful and permanent ſti-
mulus ; which, as it is received into the blood,
is applied to every part of the body. By its
direct ſtimulant power, or by the indirect eva-
cuating effects which it produces, it is employ-
ed with the utmoſt advantage in various ſpaſ-

modic diſeaſes; in tetanus and hydrophobia; in the fevers of warm climates; in rheumatiſm, acute and chronic; in viſceral obſtructions, and in many other chronic morbid affections.

Its principal medicinal virtue, however, is that of curing lues venerea. Its mode of operation in this caſe has given riſe to many diſputes: ſome aſcribing its efficacy to the evacuation it occaſions; others conſidering it as an antidote to the venereal poiſon; while ſome aſcribe its efficacy to its general and permanent ſtimulant operation, by which it induces and keeps up an action incompatible with that which conſtitutes lues venerea, till at length the virus is changed, or eliminated from the body by the uſual diſcharges. This latter opinion, originally propoſed by Mr Hunter, ſeems to afford the moſt ſatisfactory ſolution.

For the cure of ſyphilis, mercury is adminiſtered, until moderate ſalivation is excited; and this is kept up for ſome time, longer or ſhorter proportioned to the kind and violence of the ſymptoms. Cold is to be guarded againſt, as tending to induce profuſe ſalivation. When

this

his occurs, it may be moderated by opium, a riſk cathartic, the application of a bliſter to he throat, and, as has been affirmed, by the adniniſtration of ſulphuret of potaſh.

The mildeſt preparations of mercury are thoſe in which it is oxydated by ſimple trituration. Rubbed with mucilage, it forms Plenk's Solution; with chalk, the Hydrargyrus cum Creta of the London Pharmacopœia; and with manna or conſerve of roſes, the common Mercurial Pill. The latter is one of the beſt preparations. Given in a doſe of eight grains morning and evening, it ſoon affects the ſyſtem; in a larger doſe, it is apt to run off by the bowels.

Triturated with lard, mercury forms the Mercurial Ointment, the ſtrongeſt ointment being compoſed of equal parts of each. The mercury exiſts in it partly in a ſtate of extreme mechanical diviſion, partly oxydated, and partly, as ſome have conjectured, combined with ſebacic acid. Rubbed upon the ſkin, in the quantity of one drachm every evening, the mercury is taken up by the abſorbents; and in local venereal ſymptoms, as bubo, or where the inteſtines are very irritable, this method of introducing it is of the utmoſt advantage.

The Mercurial Plaſter is the metal triturated with melted reſin and oil, and mixed with litharge plaſter: it is applied to glandular tumors, venereal or not, as a diſcutient.

Mercury oxydated by expoſure to the atmoſpheric air, at a high temperature, (Oxidum Hydrargyri Rubrum, Hydrargyrus Calcinatus), affords a preparation, ſuppoſed by ſome to be the moſt uniform in its ſtrength, and moſt certain in its operation, of all the mercurials. Its doſe is one grain night and morning.

Various preparations are obtained from the metal oxydated by the acids. The Nitrat of Mercury decompoſed by heat, furniſhes the Oxidum Hydrargyri Rubrum per Acidum Nitricum, or more properly the Sub-nitras Hydrargyri, in which the metal is highly oxydated, and to which there alſo adheres a ſmall portion of the acid. It is uſed only externally as an eſcharotic. By the action of ammonia, the acid is not only completely abſtracted, but the metallic oxyd is alſo deprived of part of its oxygen. A black or grey oxyd is thus obtained, (Oxidum

Hydrargyri Cinereum), which is comparatively a mild preparation. Its doſe is 1 or 2 grains. Mercury oxydated by the ſulphuric acid, forms the yellow oxyd, (Sub-Sulphas Hydrargyri, olim Turpethum Minerale), to which a ſmall quantity of acid ſtill adheres. In a doſe of 3 or 4 grains, it acts as a powerful emetic.

The preparations in which the mercury is ſaturated with an acid, are very active. The Nitrous ſolution of it is highly cauſtic. Mixed with lard, it forms an ointment, Unguentum Hydrargyri Nitrati, uſed in cutaneous diſeaſes.

Mercury, combined with the muriatic acid, forms two very active preparations, the Murias Hydrargyri, and Sub-Murias Hydrargyri.

The firſt of theſe, Corroſive Muriat of Mercury, or, as it was named, Corroſive Sublimate of Mercury, is compoſed of the metal highly oxydated, and combined with a large proportion of muriatic acid. The proportions are 69.6 mercury, 12.3 oxygen, and 18 of acid. It is the moſt virulent of all the preparations of this metal, and cannot be given with ſafety in a larger quantity than $\frac{1}{4}$th of a grain: its medium doſe is $\frac{1}{6}$th or $\frac{1}{8}$th. It acts more generally on the ſyſtem than any other preparation, and very ſpeedily arreſts the progreſs of ſyphilis. But it is occaſionally violent in its operation, and its effects are not permanent, the diſeaſe frequently returning in the ſame or ſome other form. A very dilute ſolution of it is uſed as a collyrium in venereal ophthalmia, as a gargle in venereal ſore-throat, as an injection in gleet, and as a lotion in ſome cutaneous affections.

The Sub-Muriat, Mild Muriat of Mercury, or Calomel, is obtained by combining the corroſive muriat with nearly an equal part more of the metal. Its conſtituent parts, therefore, are the ſame, and it differs from the corroſive muriat merely in the mercury being leſs highly oxydated, and in that oxyd being combined with a ſmaller proportion of muriatic acid. The proportions are, mercury 79, oxygen 9.5, and acid 11.5. It is mild in its operation, and is one of the moſt uſeful of the mercurial preparations. In ſyphilis it is given in the doſe of a grain night and morning; it is likewiſe adminiſtered with the greateſt advantage in glandular obſtructions, dropſy, chronic rheumatiſm, hydrocephalus, hydrophobia, the fevers of warm climates, and many other diſeaſes. In ſome of theſe diſeaſes, as hydrophobia or hydrocephalus, it is neceſſary to give it in very large doſes. As a cathartic it is equally mild and effectual in its operation.

Murias Hydrargyri Ammoniacalis, Calx Hydrargyri Alba of the London Pharmacopœia, is prepared by decompoſing corroſive muriat of mercury by ammonia. A precipitate is obtained, which conſiſts of oxyd of mercury holding combined with it muriatic acid and a ſmall quantity of ammonia. It is too acrid for internal uſe, but is employed externally as a mild eſcharotic, and as an application in various cutaneous affections.

With the acetous acid mercury forms the Acetis Hydrargyri, a ſalt which is the baſis of Keyſer's pills, a medicine once highly celebrated. It is mild, but uncertain in its operation. Its doſe is from 2 to 5 grains.

With phoſphoric acid, the Phoſphat of Mercury is formed, a preparation of conſiderable activity and certainty. The doſe of it is one grain.

Theſe

Theſe preparations of mercury, often require to be combined with opium, to obviate irritation, and prevent them from running off by the bowels. They are alſo in different diſeaſes combined with ſeveral other active medicines.

Two preparations remain, in which the metal is combined with ſulphur. The Hydrargyrus Sulphuratus Niger conſiſts of equal parts of mercury and ſulphur triturated together, ſo as to form a black powder. It is a very inactive preparation, and has been uſed only as an anthelmintic, in a doſe to an adult of one ſcruple or half a drachm. The Hydrargyrus Sulphuratus Ruber or Cinnabar, is the mercury united with about one-fourth of its weight of ſulphur by ſublimation. It is uſed only to fumigate venereal ulcers.

### FERRUM. Iron.

A METAL very abundant in nature, of a bluiſh grey colour, highly ductile, ſcarcely fuſible, but eaſily oxydated in atmoſpheric air, and ſubject to ruſt. It is conſidered as the metal moſt friendly to the human frame, acting always as a powerful tonic, increaſing the power of digeſtion, quickening the circulation,

and

nd cauſing the blood, it is ſaid, to aſſume a ore florid hue. It is ſtill a ſubject of diſpute, hether it acts merely on the ſtomach and in- eſtinal canal, or whether it enters into the lood.

The diſeaſes in which it is uſed are thoſe of hronic debility, eſpecially chloroſis, dyſpep- ia, hypochondriaſis, hyſteria, paralyſis, and ickets.

The Limatura Ferri, or Filings of Iron, are iven in any doſe from one ſcruple to a drachm r two; their activity is entirely dependent on he quantity of acid preſent in the ſtomach.

The Red Oxyd of Iron is given in a doſe of grains.

The Carbonat, or Ruſt of Iron, is the metal xydated by expoſure to the air with moiſture, nd combined with carbonic acid; it is more ctive than the pure metal, and leſs irritating han the ſaline preparations. Doſe from 5 to 20 grains.

The Murias Ferri Ammoniacalis, vel Ferrum Ammoniatum, is a mixture of muriat of iron and uriat of ammonia. It is ſtill more active than he ruſt. Doſe from 5 to 12 grains.

The

The Tinctura Ferri Muriati is a ſolution of the muriat of iron in alkohol. It is a very active preparation; ſometimes too much ſo in an irritable ſtate of the ſtomach. Its doſe is 10 or 15 drops in a glaſs of water.

The Sulphat of Iron, or combination of iron and ſulphuric acid, is a ſalt highly active, and poſſeſſing more of an aſtringent power than any of the other preparations. Hence, beſides its uſe in diſeaſes of general debility, it is preferred to the others in menorrhagia, and ſome other caſes of morbid evacuations. The medium doſe of it is 5 grains.

The Chalybeate Waters are natural combinations of iron, often uſed with ſtill more advantage.

## ZINCUM, Zinc.

A METAL of a bluiſh white colour, brittle, melting in a moderate heat, and burning with a bright green flame; obtained from calamine, a native oxyd of the metal.

Oxyd of Zinc, prepared by burning the pure metal, has been uſed as a tonic in epilepſy, chorea, and ſome other ſpaſmodic diſeaſes. The doſe is from 10 to 20 grains.

The Sulphat of Zinc has been uſed in the ſame caſes in a doſe from 1 to 3 grains. In a doſe of 5 or 10 grains it acts as an emetic. Its ſolution in water is uſed as an aſtringent injection in gonorrhœa, and as a collyrium in ophthalmia.

Cuprum. Copper.

A metal of a red colour, oxydated by heating it in atmoſpheric air, having an unpleaſant ſtyptic taſte, and poiſonous even in a ſmall doſe. Its tonic power, like that of zinc, is eſtimated by its ſucceſsful exhibition in epilepſy and ſome other ſpaſmodic diſeaſes, dependent on or connected with debility. A peculiar preparation of it, the Ammoniarctum Cupri, is given in the doſe of half a grain twice a-day, increaſing it gradually as far as the ſtomach or ſyſtem will bear it. The Sulphat of Copper is a powerful aſtringent, and an eſcharotic, and as ſuch is uſed externally. In a doſe of 2 or 3 grains, taken internally, it proves emetic.

ARSENICUM. Arſenic.

A METAL of a dark-grey colour, very volatile, and eaſily oxydated. By oxydation it is converted into a white powder, which has been conſidered as an oxyd, and lately, perhaps more juſtly, as an imperfect acid. This ſubſtance, the White Arſenic of commerce, is obtained by ſublimation from arſenical ores. Its taſte is penetrating and corroſive; its effects are thoſe of a violent local ſtimulant; it occaſions ſickneſs, inceſſant vomiting, inflammation, and even eroſion of the ſtomach. The conſequences which more ſlowly ſucceed its adminiſtration in too large a doſe, are paralyſis and other ſymptoms connected with indirect debility.

Though the moſt violent of the mineral poiſons, it equals, when properly adminiſtered, the firſt medicines belonging to the claſs under which we have arranged it. Its principal medicinal application has been for the cure of intermittent fever.

The arſenical ſolution of Fowler, a combination of arſenious acid and potaſh diſſolved in

water,

ater, is given in a doſe of 4 drops, three times -day, and gradually increaſed to double that uantity; its uſe being occaſionally intermitted, not perſiſted in if it does not ſoon prove effec-ual, and immediately relinquiſhed if it occaſion naufea or purging. The arſeniat of potaſh, or of ſoda, is uſed in the ſame manner, in the doſe of the eighth part of a grain of the cryſtallized ſalt. In the ſame form it has been uſed in remitting fever, in periodical headach, in dropſy, hydrophobia, and elephantiaſis. There ſeems little propriety in having recourſe to it in theſe diſeaſes, at leaſt in which other remedies leſs dangerous are capable of effecting a cure. Externally, it is uſed in ſcirrhus and cancer; theſe applications of it will be noticed under the claſs of Eſcharotics.

The antidotes which have been recommended to the poiſon of arſenic are various. Vomiting muſt be immediately excited, and as the ſtomach is highly irritable in ſuch caſes, the milder emetics, and eſpecially oil, which is ſuppoſed to involve the particles of the poiſon, have been recommended. According to the aſſertion of Renault, oil appears from experiments rather to favour its action, and tepid water, or mucilaginous liquors, ought to be preferred. Reliance has been placed on ſolutions of the alkaline ſulphurets, or of ſulphurated hydrogen. The latter appears, from Renault's experiments, to have ſome power, ſince, if it were previouſly combined with the arſenious acid, it rendered it nearly inert; but if merely introduced into the ſtomach with it, or after it had been ſwallowed, eſpecially if the arſenic were not diſſolved, it ſeemed to have little efficacy as an antidote.

BARYTES. Terra Ponderoſa. Heavy Earth.

THIS earth is found in nature combined with ſulphuric acid, and with carbonic acid. The native carbonat is poiſonous to animals. The form under which the barytes has been uſed in medicine, is in combination with the muriatic acid; for the preparation of which a formula has been inſerted in the Edinburgh Pharmacopœia. The ſaturated ſolution of this ſalt was introduced by Dr Crawford, as a remedy in ſcrofula, and it has ſince been uſed in various forms of hectic fever. Its effects are to improve the appetite and general ſtrength; ſometimes it occaſions diaphoreſis or diureſis. Its doſe is 5 drops, gradually increaſed to 20 or more. In too large a doſe it occaſions ſickneſs, vertigo, tremors, and inſenſibility.

CALX. Lime.

THIS earth exiſts abundantly in nature combined with carbonic and other acids. From the native carbonat it is obtained by expelling the carbonic acid by heat. The pure lime is ſoluble in water in ſmall quantity; the ſolution has a ſtyptic taſte. It is uſed with advantage in dyſpepſia, its beneficial effects ariſing probably in part from its aſtringent power, and partly from its chemical agency in neutralizing acidity. As a pure tonic, the combination of it with muriatic acid has been repreſented as of much efficacy, and as being at leaſt equal to the muriat of barytes. Like it, it has been uſed in ſcrofula and hectic fever, and alſo in dyſpepſia. Its doſe is from half a drachm to a drachm of the ſaturated ſolution.

ACIDUM

### ACIDUM NITRICUM. Nitric Acid.

THIS acid is the product of the ſaturation of azot with oxygen, and is generally obtained by decompoſing nitrat of potaſh by ſulphuric acid, aſſiſted by heat. It is colourleſs, emits white fumes; ſpecific gravity 1504; is extremely corroſive, and poſſeſſes all the acid properties.

The tonic powers of this acid are conſpicuous in ſupporting the ſyſtem under a mercurial courſe. As a remedy againſt lues venerea, from the evidence that has been collected, it is undeniable that it is capable of counteracting the ſyphilitic poiſon. The ſecondary ſymptoms of the diſeaſe have diſappeared under its uſe, and the primary ſymptoms been completely removed. It is however inferior to mercury in the certainty of its operation, but is a valuable remedy combined with it, both as promoting its operation, and as obviating the injurious effects of mercurial irritation. With ſuch views, it is given in a doſe of from 1 to 2 drachms, largely diluted with water, in the courſe of the day. It is likewiſe adminiſtered with advantage in dyſpepſia, and in that chronic affection of the liver frequently ariſing from reſidence in a warm climate.

OXY-MURIAS POTASSÆ. Oxy-muriat of Potaſh.

THIS ſalt, which ſtrictly ſpeaking is the Hyper-oxygenated Muriat of Potaſh, is prepared by introducing a current of oxy-muriatic acid gas into a ſolution of potaſh. Common muriat, and hyper-oxygenated muriat of potaſh are formed, the latter ſeparating by cryſtallization in brilliant white flakes.

As a remedy, it may be claſſed with the nitric acid; its operation in checking or removing the ſymptoms of ſyphilis is ſimilar; it alſo increaſes the force of the circulation, and excites the actions of the ſyſtem. Its efficacy as an anti-venereal is conſidered as ſuperior to that of the nitric acid. The doſe in which it is given is 10 grains three or four times a-day, and increaſed gradually to 20 or 25.

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## *TONICS FROM THE VEGETABLE KINGDOM.*

The tonic power in vegetables is intimately connected with certain ſenſible qualities, with their bitterneſs, aſtringency, and aromatic quality, all of them perhaps poſſeſſing theſe qualities, though, in each, one may be more predominant than the other. The pureſt bitters, aſtringents, and aromatics, poſſeſs alſo more or leſs of a tonic power. Of theſe diviſions, the pure Aſtringents form a diſtinct claſs; the remaining tonics may be arranged according as the bitterneſs or aromatic quality is predominant in them.

The ſtimulant operation of the purer Bitters is little diffuſible, and very ſlow in its operation; their effects are principally on the ſtomach and digeſtive organs, to which they communicate vigour, though they alſo act in ſome degree on the general ſyſtem, and obviate debility, as is evident

vident in particular from their efficacy in intermittent fevers, in dropſy, and gout, and from their debilitating effects when uſed for too long a time.

Aromatics are more rapid and diffuſible in heir action; they quicken the circulation, and augment the heat of the body. Their action has little permanence; hence, in medicine, they are employed either as mere temporary ſtimulants, or to promote the action of bitters or aſtringents.

From theſe different modes of action of bitters and aromatics, it is evident, that a more powerful tonic will be obtained from the combination of theſe qualities than where they exiſt ſeparately. The moſt powerful tonics are accordingly natural combinations of this kind. Theſe may firſt be conſidered, proceeding afterwards to the more pure bitters and aromatics.

CINCHONA OFFICINALIS. Cortex Peruvianus. Peruvian Bark. *Pentand. Monogyn. Contortæ.* *Cortex. Peru.*

THE tree affording this bark grows wild in the hilly parts of Peru; the bark is ſtripped from the branches, trunk, and root, and dried. Three kinds of it are now in uſe, the Pale, Red, and Yellow, which ſome have conſidered as mere varieties, though they more probably are different ſpecies.

The Pale bark is in the form of ſmall quilled twigs, thin, breaking cloſe and ſmooth, friable between the teeth, covered with a rough coat of a browniſh colour, internally ſmooth and of a light brown; its taſte is bitter, and ſlightly aſtringent; flavour ſlightly aromatic, with ſome degree of muſtineſs.

The Red is in large thick pieces, externally covered with a brown rugged coat, internally more ſmooth and compact, but fibrous; of a dark red colour; taſte and ſmell ſimilar to that of the pale, but the taſte rather ſtronger.

The Yellow, ſo termed becauſe it approaches more to that colour than either of the others do, is in flat pieces, not convoluted like the pale, nor dark-coloured like the red; externally ſmooth, internally of a light cinnamon colour, friable and fibrous; has no peculiar odour different from the others, but a taſte incomparably more bitter, with ſome degree of aſtringency.

From the general analyſis of bark, it appears to conſiſt, beſides the woody matter which compoſes the greater part of it, of gum, reſin, gallic acid, of very ſmall portions of tannin and eſſential oil, and of ſeveral ſalts having principally lime for their baſis. Seguin has alſo ſuppoſed the exiſtence of gelatin in it, but without ſufficient proof. Cold water infuſed on pale bark for ſome hours, acquires a bitter taſte with ſome ſhare of its odour; when aſſiſted by a moderate heat, the water takes up more of the active matter: by decoction, a fluid, deep coloured, of a bitter ſtyptic taſte, is obtained, which, when cold, depoſites a precipitate of reſinous matter and gallic acid. By long decoction, the virtues of the bark are nearly deſtroyed, owing to the oxygenation of its active matter. Magneſia enables water to diſſolve a larger portion of the principles of the bark, as does lime, though in an inferior degree. Alkohol is the moſt powerful ſolvent of its active matter. Brandy and other ſpirits and wines afford alſo ſtrong ſolutions in proportion to the quantity of alkohol they contain. A ſaturated ſolution of ammonia is alſo a powerful ſolvent; vinegar is leſs ſo even than water. By diſtillation, water is ſlightly impregnated with the flavour of bark; it is doubtful whether any eſſential oil can be obtained.

The action of menſtrua on the red bark is nearly the ſame, the ſolutions only being conſiderably ſtronger, or containing a larger quantity of reſinous matter, and of the aſtringent principle.

The analyſis of the yellow bark ſhows that its active principles are more concentrated than in either of the others, affording to water, alkohol, &c. tinctures much ſtronger both in bitterneſs, and aſtringency, eſpecially in the former quality.

From the general analyſis of theſe barks, it appears that they conſiſt of nearly the ſame proximate principles, which vary in their proportions; the moſt active component parts are the reſin, extractive matter, and the gallic acid, and theſe in combination probably conſtitute the tonic quality of the bark. In the beſt pale bark, this active matter amounts to about one-eighth part.

The red bark has been conſidered as ſuperior in efficacy to the pale, though what is now met vith in the ſhops is undoubtedly inferior; the ellow is repreſented, apparently with juſtice, as eing more active than either of the others.

The effects of Peruvian bark are thoſe of a owerful and permanent tonic, ſo ſlow in its peration that its ſtimulating property is ſcarcey perceptible by any alteration in the ſtate of e pulſe, or of the temperature of the body. n a large doſe, it occaſions nauſea and headach; n ſome habits it operates as a laxative; in hers it occaſions coſtiveneſs.

It is one of thoſe medicines, the efficacy of hich in removing diſeaſe is much greater an could be expected, *à priori*, from its effects the ſyſtem in a healthy ſtate.

Intermittent fever is the diſeaſe for the cure which bark was introduced into practice, and ere is ſtill no remedy which equals it in wer.

The diſputes reſpecting the mode of adminiring it are now ſettled. It is given as early poſſible, with perhaps the previous exhibition an emetic to evacuate the ſtomach; it is reated in the doſe of 1 ſcruple or half a drachm ery ſecond or third hour, during the interval of the paroxyſm; and it may even be given with ſafety during the hot fit, but it is then more apt to excite nauſea.

In remittent fever it is given with equal freedom, even though the remiſſion of the fever may be obſcure.

In thoſe forms of continued fever which are connected with debility, as in typhus, cynanche maligna, confluent ſmall-pox, &c. it is regarded as one of the moſt valuable remedies. It may be prejudicial, however, in thoſe diſeaſes where the brain or its membranes are inflamed, or where there is much irritation, marked by ſubſultus tendinum, and convulſive motions of the extremities; and in pure typhus it appears to be leſs uſeful in the beginning of the diſeaſe than in the convaleſcent ſtage.

Even in fevers of an oppoſite type, where there are marks of inflammatory action, particularly in acute rheumatiſm, bark has been found uſeful, after blood-letting.

In eryſipelas, in gangrene, in extenſive ſuppuration, and venereal ulceration, the free uſe of bark is of the greateſt advantage.

In the various forms of paſſive hæmorrhagy, in many other diſeaſes of chronic debility, dyſpepſia, hypochondriaſis, paralyſis, rickets, ſcrofula, dropſy, and in a variety of ſpaſmodic affections, epilepſy, chorea, and hyſteria, it is adminiſtered as a powerful and permanent tonic, either alone, or combined with other remedies ſuited to the particular caſe.

Its uſual doſe is half a drachm. The only inconvenience of a larger doſe is its ſitting uneaſy on the ſtomach. It may, therefore, if neceſſary, be frequently repeated, and in urgent caſes may be taken to the extent of 1 ounce, or even 2 ounces, in twenty-four hours.

The powder is more effectual than any of the preparations; it is given in wine, in any ſpiritous liquor, or, if it excite nauſea, combined with an aromatic. The cold infuſion is the leaſt powerful, but moſt grateful; the decoction contains much more of the active matter of the bark, and is the preparation generally uſed when the powder is rejected; its doſe is from 2 to 4 ounces. The ſpiritous tincture, though containing ſtill more of the bark, cannot be extenſively uſed on account of the menſtruum, but is principally employed, occaſionally and in ſmall doſes of 2 or 3 drachms, as a ſtomachic. The extract is a preparation of conſiderable power, when properly prepared, and is adapted to thoſe caſes where the remedy requires to be continued for ſome time. It is then given in the form of pill, in a doſe from 5 to 15 grains.

Bark is likewiſe ſometimes given in the form of enema; 1 ſcruple of the extract, or 2 drachms of the powder, being diffuſed in 4 ounces of ſtarch mucilage. The decoction is alſo ſometimes applied as a fomentation to ulcers.

*Offic. Prep.*—Decoct: Cinch. Extr: Cinch. Inf: Cinch. Tinct: Cinch: *Ed.*—Extr: Cort: P. Extr: Cort: P: cum reſina. T: Cinch: Am. T: Cinch: C. *Lond.*

CINCHONA CARIBÆA. Caribæan Bark.

THIS ſpecies, belonging to the ſame genus, a native of the Caribee Iſlands, has been propoſed as a ſubſtitute to Peruvian bark, and has as ſuch been received into the Edinburgh Pharmacopœia. It is more bitter, and leſs aromatic. The Cinchona Floribunda, or St Lucia bark, has been alſo recommended, and ſometimes uſed.

ANGU-

### ANGUSTURA

Is a bark imported within theſe few years from the Spaniſh Weſt Indies, the botanical characters of the tree producing it being unknown. It is in flat pieces, externally grey and wrinkled; internally, of a yellowiſh-brown, and ſmooth; has little flavour; taſte, bitter and ſlightly aromatic. Water, aſſiſted by heat, takes up the greater part of its active matter, which does not ſeem to be injured even by decoction. Alkohol diſſolves its bitter and aromatic parts, but precipitates the extractive matter diſſolved by water. Proof ſpirit is its moſt proper menſtruum. By diſtillation, it affords a ſmall quantity of eſſential oil. The powdered bark, triturated with lime or potaſh, and water, gives a ſmell of ammonia.

Anguſtura is a powerful antiſeptic. It was originally introduced in the Weſt Indies as a remedy in fevers, equal or even ſuperior to the Peruvian bark. In this country, it has been principally uſed in obſtinate diarrhœa, and in chronic dyſentery, and with advantage. Its doſe is from 10 to 20 grains of the powder, or one drachm in infuſion or decoction. Its tincture with proof ſpirit in a doſe of one or two drachms has been uſed in dyſpepſia.

ARISTOLOCHIA SERPENTARIA. Serpentaria Virginiana. Virginian Snake-root. *Gynand. Hexand. Sarmentoſ. Radix. Virginia, Carolina.*

THIS root conſiſts of a number of ſmall fibres, iſſuing from one head, of a light brown colour, having a ſlightly aromatic ſmell, and a pungent bitteriſh taſte. Its active matter is extracted partially by water, and by alkohol; entirely by proof ſpirit. By diſtillation, it affords a ſmall quantity of an eſſential oil; fragrant, but not pungent.

Serpentaria is a ſtimulating aromatic tonic, formerly much employed in fevers of the typhoid kind, to ſupport the powers of the ſyſtem. It was given in a doſe of from 10 to 20 grains every fourth or fifth hour. It promotes the efficacy of cinchona in the cure of intermittents and remittents, and is a remedy of conſiderable power in dyſpepſia. It is given in ſubſtance, or in the form of tincture.

*Offic. Prep.*—T: Ariſt: Serpent. *Ed.*

ORSTENIA CONTRAYERVA. Contrayerva. *Tri-and. Monog. Scabrid. Radix. Peru, W. Indies.*

This root is in ſmall knotted pieces, of a ellowiſh colour; has an aromatic ſmell, and a itteriſh taſte; yields its active matter to wa-er and alkohol. Contrayerva was formerly uſed s a ſtimulant in typhoid fever, in a doſe from to 20 grains. The compound powder of it, f the London Pharmacopœia, is uſed as a re-edy in diarrhœa.

*Offic. Prep.*—P: Contrayerv: C. *Lond.*

ROTON ELEUTHERIA. Caſcarilla. *Monoec. Monadelph. Tricoccæ. Cortex. Bahama Iſlands, North America.*

Cascarilla bark is in ſmall quills; has a ightly aromatic ſmell, and a warm bitter taſte; s highly inflammable. It has been uſed as a ubſtitute for the Peruvian bark, and has been ecommended as a remedy in dyſentery, and in bſtinate diarrhœa. Its uſual doſe is a ſcruple r half a drachm.

*Offic. Prep.*—Extr: Caſc. T: Caſc. *Lond.*—Extr: Caſc: cum Reſin. *Dub.*

Colomba.

## COLOMBA.

OF the plant which furniſhes this root, no botanical account has been obtained. It is brought from Ceylon in round pieces; the ſides covered with a bark; the woody part of a light yellow colour. It has an aromatic ſmell, and a bitter taſte. It yields its bitterneſs to water, but proof-ſpirit is its proper menſtruum.

Colomba is a powerful antiſeptic and bitter; it is uſed with much advantage in affections of the ſtomach and inteſtinal canal, accompanied with redundance of bile; it is alſo employed in dyſpepſia. Its doſe is half a drachm of the powder, which in urgent caſes may be repeated every third or fourth hour.

*Offic. Prep.*—Tinct: Colomb. *Ed.*

## QUASSIA EXCELSA. Quaſſy. *Decand. Monogyn. Gruinales. Lignum. Weſt Indies.*

THE wood of this tree is of a white colour; has a taſte intenſely bitter; no odour. The bitterneſs is extracted equally by water and by alkohol.

It is uſed as a remedy in dyſpepſia, diarrhœa, and in remittent and intermittent fevers. It is alſo employed to check vomiting. It is commonly given in the form of the watery infuſion; in ſubſtance, its doſe is from 10 to 30 grains.

QUASSIA SIMAROUBA. Simarouba. *Decand. Monogyn. Gruinales. Cortex. South America.*

SIMAROUBA Bark is in long pieces, of a fibrous texture and yellowiſh colour; deſtitute of odour; has a ſtrong bitter taſte. It is however very variable in its ſenſible qualities, ſome having ſcarcely any bitterneſs. Water and alkohol diſſolve its active matter; the ſolution in either ſuffers no change from ſulphat of iron.

Simarouba has been celebrated as a remedy in dyſentery and chronic diarrhœa. It has been given generally in the form of decoction: in ſubſtance the doſe is one ſcruple.

SWIETENIA FEBRIFUGA. Swietenia. *Decand. Monogyn. Tribilatæ. Cortex. Eaſt Indies.*

THE bark of the wood of this tree is of a red colour internally; has an aſtringent bitter taſte; yields its active matter to water. It has been propoſed as a ſubſtitute for Peruvian bark, and has been uſed as ſuch with advantage. Doſe half a drachm.

### SWIETENIA MAHAGONI. Mahogany.

THIS ſpecies, of the ſame genus as the preceding, has ſimilar qualities and virtues. The bark of it has therefore been received into the Edinburgh Pharmacopœia.

### GENTIANA LUTEA. Gentian. *Pentand. Digyn. Rotaceæ. Radix. Switzerland, Germany.*

THIS root is in long flexible pieces, and has a very bitter taſte, without any peculiar flavour. This bitterneſs is extracted both by water and alkohol.

Gentian is a common remedy in dyſpepſia, in the form of infuſion or tincture; and as a bitter, forms the baſis of many ſtomachic remedies. In ſubſtance it has been uſed for the cure of intermittents, in a doſe of half a drachm.

*Offic. Prep.*—Extr: Gent: Lut. Inf: Gent: C. T: Gent: C. T: Rhei cum Gent. Vin: Gent: C. *Edin.*

ANTHEMIS NOBILIS. Chamæmelum. Chamomile. *Syngenes. Polygam. ſuperſl. Compoſitæ. Flores. Indigenous.*

THERE are two varieties of theſe flowers; the ſingle and double flowered: the former is much ſtronger, the odour and taſte reſiding not in the white petals, but in the diſk or tubular florets. Both have a bitter nauſeous taſte, and a ſtrong unpleaſant odour. The taſte is extracted by water and alkohol. Diſtilled with water, they yield a ſmall quantity of eſſential oil.

Chamomile is a powerful bitter, and as ſuch is uſed in dyſpepſia. Its infuſion, when ſtrong, acts as an emetic, and is often uſed to promote the action of other emetics. In ſubſtance, it has been given as a remedy in intermittent fever, in a doſe of half a drachm three or four times a-day.

*Offic. Prep.*—Decoct: Anth: N. Extr: Anth: N. *Edin.*

THE following plants, poſſeſſing bitterneſs in a greater or leſs degree, were formerly much employed, but are now diſcarded from practice. They poſſeſs no virtues but thoſe of bitters, and as they have all more or leſs of a nauſeous flavour, gentian, colomba or quaſſia is preferred to them. It is neceſſary to notice only their botanical characters.

ARTEMISIA ABSINTHIUM. Wormwood. *Syngenes. Polygam. ſuperfl. Compoſitæ. Herba. Indigenous.*

CHIRONIA CENTAURIUM. Centaury. *Pentand. Monogyn. Rotaceæ. Herba.*

MARRUBIUM VULGARE. Hoarhound. *Didynam. Gymnoſperm. Verticillatæ. Herba.*

MENYANTHES TRIFOLIATA. Trefoil. *Pentand. Monog. Rotaceæ. Herba.*

CENTAUREA BENEDICTA. Bleſſed Thiſtle. *Syngenes. Polygam. fruſtran. Compoſitæ. Herba. Spain.*

## *AROMATICS.*

The ſubſtances belonging to this ſubdiviſion of the vegetable tonics, ſtimulate the ſtomach and general ſyſtem, augment the force of the circulation, and increaſe the heat of the body. They are ſcarcely ſufficiently permanent in their action to be uſed by themſelves as Tonics; but they always promote the action of bitters and aſtringents, and are uſed with advantage to obviate ſymptoms ariſing from debility of the ſtomach or inteſtinal canal. Their aromatic quality in general reſides in an eſſential oil, which in each of them varies in flavour, pungency, and other ſenſible qualities, but which is nearly alike in its chemical properties. It is ſoluble entirely in alkohol, is ſparingly ſoluble in water, and is extracted from them by diſtillation.

Citrus aurantium. Orange. *Polyadelph. Ico-ſand. Pomaceæ. Cortex flavus ; Fructus ; Fructus immaturus. India.*

The outer yellow rind of the fruit of the orange has a grateful aromatic flavour, and a warm bitteriſh taſte. Both are extracted by water, and by diſtillation a ſmall quantity of eſſential oil is obtained. Its qualities are thoſe of an aromatic and bitter. It has been employed to reſtore the tone of the ſtomach, and is a very common addition to combinations of bitters uſed in dyſpepſia. It has likewiſe been given in intermittents in a doſe of a drachm twice or thrice a-day.

*Offic. Prep.*—Aq: Citri Aur. Conſ: Citr: Aur. Syr: Citr: Aur. Ol: Citr: Aur. *Ed.*—T: Cort: Aur. *Lond.*

The unripe fruit, *Aurantia Curaſslaventia*, retain when dried the aromatic flavour of the peel, with rather a larger ſhare of bitterneſs, and are applied to the ſame uſes.

CITRUS MEDICA. Lemon. *Polyadelph. Icoſand. Pomaceæ. Cortex fructûs. Aſia.*

THE exterior rind of the fruit of the lemon, is ſimilar in flavour and taſte to that of the orange, but is rather leſs bitter. It has been alleged alſo that its flavour is more periſhable, and it is leſs frequently uſed.

*Offic. Prep.*—Aq: Citr: Med. Syr: Citr: Med. Ol: Eſſ: Citr. M. *Ed.*

LAURUS CINNAMOMUM. Cinnamon. *Enneand. Monogyn. Oleraceæ. Cortex. Ceylon.*

CINNAMON is the interior bark of the tree; it is thin and convoluted, of a texture ſomewhat fibrous, of a light brown colour, having an agreeable pungent taſte, with a degree of ſweetneſs, and an aromatic flavour. Its virtues chiefly depend on a ſmall quantity of eſſential oil which it contains.

Cinnamon is the moſt grateful of the aromatics. It is uſed to cover the flavour of other medicines, and to reconcile them to the ſtomach. It is alſo employed by itſelf as a moderate ſtimulant. The watery infuſion of it is given with advantage to relieve nauſea and check vomiting.

*Offic. Prep.* — Aq: L: Cinn. Sp: L: Cinn. T: L: Cinn. T: L: Cinn: C. *Ed.*

LAURUS CASSIA. Caſſia. *Enneand. Monogyn. Oleraceæ. Cortex. Flores nondum expliciti. Eaſt Indies.*

THE Caſſia Bark reſembles that of cinnamon in appearance, taſte and flavour; but is diſtinguiſhed by its taſte being more pungent, leſs ſweet and more mucilaginous than that of the real cinnamon; by its texture being denſer, or leſs ſhivery; and by the pieces of it being thicker and leſs convoluted. Its aromatic quality, like that of cinnamon, reſides in an eſſential oil. It affords a diſtilled water, ſtronger, but leſs agreeable than that of the genuine cinnamon.

Caſſia is uſed for the ſame purpoſes as cinnamon; it is much leſs agreeable to the ſtomach, however, and cannot be with propriety ſubſtituted for the other, where there is nauſea or vomiting.

*Offic. Prep.*—Aq: L: Caſs. *Ed.*

The dried buds of the caſſia have a taſte and flavour ſimilar to the bark, and are uſed for the ſame purpoſes.

CANELLA ALBA. *Dodecand. Monogyn. Oleraceæ. Cortex. Weſt Indies.*

THIS is the inner bark of the branches of the tree. It is in quills or flat pieces, of a light brown or greyiſh colour; its flavour is aromatic, and its taſte pungent. By diſtillation it affords a thick eſſential oil.

Canella is a moderately ſtrong aromatic, and is employed principally on account of its flavour. It enters into the compoſition of ſeveral tinctures, and is ſcarcely applied to any other uſe.

*Offic. Prep.*—V: Aloes cum Canella. *Ed.*

ACORUS CALAMUS. Sweet-ſcented Flag. *Hexand. Monog. Piperitæ. Radix. Indigenous.*

THIS root when dried has a ſlightly aromatic odour, and a bitteriſh, ſomewhat pungent taſte. It affords by diſtillation a ſmall quantity of eſſential oil. Its virtues are merely thoſe of an aromatic; but it is ſeldom employed.

AMOMUM ZINGIBER. Ginger. *Monand. Monog. Scitamineæ. Radix. Eaſt Indies.*

THIS plant is cultivated in the Weſt Indies, whence the dried root is imported. It is in ſmall wrinkled pieces, of a greyiſh or white colour, having an aromatic odour, and a very pungent, or even acrid taſte. The Black Ginger is the root prepared with leſs care than the White, which, previous to drying, is picked, ſcraped, and waſhed.

Ginger yields its active matter completely to alkohol, and in a great meaſure to water. By diſtillation it affords a ſmall quantity of eſſential oil.

This root is frequently employed as a grateful and moderately powerful aromatic, either in combination with other remedies, to promote their efficacy, or obviate ſymptoms ariſing from the operation, or by itſelf as a ſtimulant, particularly in dyſpepſia, flatulence, tympanitis, and gout. Its doſe may be 10 grains.

*Offic. Prep.*—Syr: Amom: Zingib. *Ed.*—T: Zingib. *Lond.* Zingib: Condit.

KÆMPFERIA ROTUNDA. Zedoaria. Zedoary. *Monand. Monog. Scitamin. Radix. E. Indies.*

THIS root is in oblong pieces, of an aſh colour; its ſmell is aromatic; its taſte pungent and bitteriſh. It contains a portion of camphor alongſt with its eſſential oil.

Its virtues are merely thoſe of an aromatic. It is very ſeldom uſed.

SANTALUM ALBUM. Yellow Saunders. *Tetrand. Monog. Bicorn. Lignum. Eaſt Indies.*

THIS wood is of a yellowiſh colour, has a fragrant ſmell, and a pungent bitteriſh taſte. It has been uſed as a ſtimulant and diaphoretic; but it is now baniſhed from practice.

PTEROCARPUS SANTALINUS. Santalum Rubrum. Red Saunders. *Diadelph. Decand. Papilionac. Lignum. India.*

THIS wood has little ſmell, and ſcarcely any taſte. At one time it was conſidered as a ſtimulating or cordial medicine; but it is now uſed only on account of its deep red colour, which it communicates to alkohol.

MYRISTICA MOSCHATA. *Monoec. Monand. Oleraceæ. Fructûs nucleus; Nux Moſchata dictus; Macis; Hujus Oleum fixum. India.*

UNDER the officinal name Myriſtica, are comprehended Nux Moſchata or Nutmeg, and Macis or Mace; the former being the ſeed or kernel of the fruit, the latter the covering with which it is immediately ſurrounded.

Nutmegs are round, of a greyiſh colour, ſtreaked with brown lines, ſlightly unctuous; they have a ſtrong aromatic flavour, and a pungent taſte. They yield their active matter entirely to alkohol: diſtilled with water, they afford a fragrant eſſential oil; by expreſſion, a ſebaceous oil is obtained from them, retaining their fragrant odour, and part of their pungency.

Nutmeg is uſed in medicine as a grateful aromatic. It may be given in a doſe from 5 to 15 grains, and has thus been employed to relieve nauſea or vomiting, or to check diarrhœa. It has been obſerved to prove narcotic in a large doſe.

Mace is a membranous ſubſtance, unctuous, of a yellow colour, and having a flavour and taſte ſimilar to the nutmeg. It is uſed for the ſame purpoſes.

The expreſſed oil of nutmeg, which is generally known by the name of Oil of Mace, has been uſed as an external ſtimulating application.

*Offic. Prep.*—Ol: Myriſt: Moſch. Sp: Myriſt: Moſch.—*Ed.*

CARYOPHYLLUS AROMATICUS. Clove. *Polyand. Monog. Heſperideæ. Flores cum pericarpio immaturo. India.*

CLOVES are the unexpanded flowers, which are dried by fumigating them, and expoſing them to the ſun. They have a ſtrong aromatic odour, and a pungent taſte. They afford to water their flavour principally; to alkohol their taſte. By diſtillation with water, they yield a fragrant eſſential oil, not very pungent. The oil of cloves commonly met with is rendered acrid by certain additions.

Cloves are amongſt the moſt ſtimulating of the aromatics; the doſe of them does not exceed from 5 to 10 grains. They are employed principally as adjuvants or corrigents to other medicines. The eſſential oil is uſed with the ſame intention, and likewiſe as a local application to toothach.

*Offic. Prep.*—Ol: Caryoph: Ar.—*Ed.*

Capsicum annuum. Capſicum. Guinea Pepper, or Capſicum. *Pentand. Monog. Solanaceæ. Fructus. Eaſt and Weſt Indies.*

The fruit of this plant is an oblong pod, of an orange colour. Its odour is aromatic and penetrating, but is impaired by drying; its taſte remains extremely hot and acrid, the ſenſation which it excites remaining long impreſſed on the palate. Its pungency is completely extracted by alkohol, and partly by water.

Capſicum is a very powerful ſtimulant. As ſuch, it has been given in atonic gout, in palſy and dyſpepſia. An infuſion of it in vinegar, with the addition of ſalt, has been uſed as a gargle in cynanche; but the practice, though it has been found ſucceſsful in the Weſt Indies, is not without danger. The ſeeds have been given with advantage in obſtinate intermittents, two grains being given at the approach of the cold paroxyſm. The doſe of the pod is from 5 to 10 grains.

PIPER NIGRUM. Black Pepper. *Diand. Trigyn. Piperitæ. Fruct. India.*

BLACK or Common Culinary Pepper is the unripe fruit of this plant dried in the ſun. Its ſmell is aromatic; its taſte pungent. Both are extracted completely by water, partially by alkohol. The eſſential oil, obtained by diſtillation, has not the pungency of the pepper, that quality reſiding in a reſinous principle.

Pepper, from its ſtimulating and aromatic quality, is employed to promote digeſtion, to relieve nauſea, or check vomiting, to remove ſingultus, and as a remedy in retrocedent gout, and paralyſis. Its doſe is 10 or 15 grains. Its infuſion has been uſed as a gargle in relaxation of the uvula.

White Pepper is the ripe berries of the ſame vegetable, freed from the outer covering, and dried in the ſun. It is leſs pungent than the black.

Piper longum. Long Pepper. *Diand. Trigyn. Piperitæ. Fructus. Eaſt Indies.*

This is the berry of the plant, gathered before it is fully ripened, and dried in the ſun. It is about half an inch long, cylindrical, and indented on the ſurface. In flavour, taſte, and other qualities, it is ſimilar to the black pepper, and may be uſed for the ſame purpoſes.

Piper cubeba. Cubebs. *Diand. Trigyn. Piperitæ. Fructus. Eaſt Indies.*

Cubebs are the dried fruit of this tree. They have an aromatic odour, and a moderately warm taſte. Their virtues are ſimilar to thoſe of the other peppers.

Myrtus pimenta. Piper Jamaicenſis. Jamaica Pepper. *Icoſand. Monog. Heſperideæ. Baccæ. Weſt Indies.*

The berries of this tree are pulled before they are ripe, and dried in the ſun. Their taſte, though pungent, is much leſs ſo than that of the peppers; their flavour is fragrant. The flavour reſides in the eſſential oil; the pungency in a reſin.

Pimento is uſed in medicine merely as an aromatic, and principally on account of its flavour.

*Offic. Prep.*—Aq: Myrt: Pim. Ol: Vol: Myrt: Pim. Sp: Myrt: P. *Ed.*

AMOMUM REPENS. Cardamomum minus. Leſſer Cardamom. *Monand. Monogyn. Scitamineæ. Semen. Eaſt Indies.*

THE ſeeds of this plant are dried, and imported in their capſules, by which their flavour is better preſerved. Their ſmell is aromatic; their taſte pungent. They are uſed merely as grateful aromatics, and are frequently combined with bitters.

*Offic. Prep.*—T: Amom: R. *Ed.*

CARUM CARUI. Caraway. *Pentand. Digyn. Umbellatæ. Semen. Indigenous.*

CARAWAY Seeds have an aromatic flavour, and a warm taſte; depending principally on an eſſential oil, which they contain in conſiderable quantity. They are uſed to relieve flatulence, one or two drachms being ſwallowed whole; and the eſſential oil is not unfrequently added to other medicines, to obviate nauſea or griping.

*Offic. Prep.*—Sp: Car: Carv. *Ed.* Ol: Car. *Lond.*

CORIANDRUM SATIVUM. Coriander. *Pentand. Digyn. Umbellatæ. Semen. South of Europe.*

THE ſeeds of this plant have a much more pleaſant odour when dried than when freſh; their taſte is moderately warm. Like caraway, they are uſed as carminative, and likewiſe to cover the taſte and flavour of ſome medicines, particularly of ſenna.

PIMPINELLA ANISUM. Aniſe. *Pentand. Digyn. Umbellat. Semen. Egypt.*

THE ſeeds of aniſe have an aromatic odour, and a warm taſte, with a ſhare of ſweetneſs. They afford, by diſtillation with water, a conſiderable quantity of an eſſential oil, having a ſtrong flavour, and a ſweet taſte, without much pungency.

Aniſe is uſed as a carminative in dyſpepſia, and in the flatulence to which children are ſubject. A drachm or two of the ſeeds may be taken, or a few drops of the oil rubbed with ſugar.

*Offic. Prep.*—Ol: Pimpin: Aniſ. *Ed.*—Sp: Aniſ. *Lond.*

THE ſeeds of the following plants have qualities and virtues ſo very ſimilar to thoſe of the aniſe or carraway, that they do not require diſtinct conſideration.

ANETHUM FŒNICULUM. Fœniculum dulce. Sweet Fennel. *Pentand. Digyn. Umbell. Semen. Indigenous.*

ANETHUM GRAVEOLENS. Dill. *Pentand. Digyn. Umbell. Semen. Spain and Portugal.*

CUMINUM CYMINUM. Cumin. *Pentand. Digyn. Umbell. Semen. South of Europe.*

ANGELICA ARCHANGELICA. Angelica ſativa. Garden Angelica. *Pentand. Digyn. Umbell. Semen; Folia; Radix. North of Europe.*—Of this plant, the root poſſeſſes the greateſt ſhare of the aromatic quality, though it alſo belongs to the ſeeds and leaves.

MENTHA PIPERITA. Mentha Piperitis. Peppermint. *Didynam. Gymnoſp. Verticill. Herba. Indigenous.*

OF the different mints, this is the one which has the greateſt degree of pungency. It affords an eſſential oil, rich in the aromatic quality of the herb. It alſo contains a ſmall portion of camphor.

Peppermint is uſed as a ſtimulant and carminative, to obviate nauſea or griping, or to relieve the ſymptoms reſulting from flatulence, and very frequently to cover the taſte and odour of other medicines. It is uſed under the forms of the watery infuſion, the diſtilled water, and the eſſential oil.

*Offic. Prep.*—Aq: Menth: P. Sp: Menth: P. Ol: Menth: P. *Ed.*

MENTHA VIRIDIS. Mentha ſativa. Spearmint. *Didynam. Gymnoſperm. Verticill. Herb. Indigenous.*

MENTHA PULEGIUM. Pennyroyal. *Didynam. Gymnoſp. Verticill. Herba. Indigenous.*

THESE two mints reſemble the peppermint in their general qualities, and are uſed for the ſame purpoſes.

HYSSOPUS OFFICINALIS. Hyſſop. *Didynam. Gymnoſp. Verticill. Herba. Aſia, South and Eaſt of Europe.*

THIS plant, nearly allied to the preceding in botanical characters, is poſſeſſed of very ſimilar qualities and virtues, and is employed for the purpoſes for which they are uſed. It has alſo been conſidered as a remedy in catarrh.

## Class IV.—ASTRINGENTS.

Astringents have been uſually conſidered as ſubſtances capable of obviating or removing increaſed evacuations, by their power of conſtringing or condenſing the ſimple ſolids, of which the veſſels are formed, and this by an action entirely chemical or mechanical, the ſame as that which they exert on dead animal matter.

Allowing, however, theſe ſubſtances to poſſeſs ſome power of this kind, their effects as remedies cannot be explained merely from its exertion. Increaſed evacuations cannot be aſcribed to mere mechanical laxity of the ſolids; and their removal cannot be referred to ſimple condenſation of theſe ſolids. Neither can it be admitted that active ſubſtances may be applied to the ſyſtem without occaſioning changes in the ſtate of the living powers. Many ſubſtances arranged as aſtringents occaſion very conſiderable alterations in ſeveral of the functions; they produce effects too which cannot be ſolely referred to a condenſing power, and therefore, in all the changes they produce, part at leaſt of their operation muſt be referred to their acting on the powers peculiar to life.

For reaſons of this kind, ſome have denied the exiſtence of ſuch remedies, and have conſidered thoſe which uſually receive the appellation of aſtringents, merely as ſtimulants, moderate and permanent in their action; in other words, as *Tonics* of inferior power. But though there be a great analogy between theſe two claſſes in their effects, and probably in their mode of operation, there is alſo a very obvious difference: the moſt powerful aſtringents,—that is, ſubſtances which immediately reſtrain exceſſive evacuations, being much inferior in real tonic power to other ſubſtances having little aſtringency; while there are powerful tonics or medicines capable of removing debility, which do not with any uniformity produce the immediate effects of aſtringents.

Perhaps aſtringents may be regarded as moderate, permanent ſtimulants having their ſtimulant operation modified by their power of condenſing the animal fibre by a mechanical, or rather a chemical action. That they exert a ſtimulant operation, is proved by their power of curing intermittent fever, and other diſeaſes of debility; and that they poſſeſs a conſtringing quality is evident, not only from the ſenſation they excite on the tongue, but is proved by the change they produce in animal matter. If theſe combined actions be exerted on the fibres of the ſtomach, the change produced, it is poſſible, may be propagated by nervous communication to other parts of the ſyſtem.

The hypotheſis of Dr Darwin, that aſtringents produce their effects by powerfully promoting abſorption, though it ſerves to explain part of their operation, ſeems to be refuted by their power of ſtopping hæmorrhage.

Some narcotics, as opium, have, in certain caſes, effects apparently aſtringent. Theſe are, where increaſed diſcharges ariſe from irritation, in which, by diminiſhing irritability, they leſſen the diſcharge; but ſuch an operation is altogether different from that of real aſtringents.

As remedies againſt diſeaſe, aſtringents may ſometimes, from their moderate ſtimulant operation, be ſubſtituted for tonics. They have thus proved ſucceſsful in the treatment of intermittent fever ; and in all caſes of debility, they ſeem to be ſerviceable, independent of their power of checking debilitating evacuations.

It is, however, for reſtraining morbid evacuations that aſtringents are uſually employed. In the various kinds of hæmorhagy,—menorrhagia, hæmoptyſis, &c. they are frequently employed with advantage, though their power is alſo often inadequate to ſtop the diſcharge. In diarrhœa they diminiſh the effuſion of fluids, and at the ſame time give tone to the inteſtinal canal, and thus remove the diſeaſe. In the latter ſtage of dyſentery they prove uſeful by a ſimilar operation. In profuſe ſweating, and in diabetes, they are frequently ſufficiently powerful to leſſen the increaſed diſcharge ; and in thoſe kinds of inflammation, termed paſſive, and even in certain caſes of active inflammation, they are applied with advantage as topical remedies.

It is an obvious caution, that aſtringents are not to be uſed to check critical evacuations, unleſs theſe proceed to exceſs.

Aſtringents may be ſubdivided into thoſe belonging to the Vegetable, and thoſe belonging to the Mineral kingdom, which differ very conſiderably from each other in their operation.

# ASTRINGENTS.

## *From the Vegetable Kingdom.*

Quercus robur.
Quercus cerris.
Tormentilla erecta.
Polygonum bistorta.
Anchusa tinctoria.
Hæmatoxylon campechianum.
Rosa gallica.
Arbutus uva ursi.
Mimosa catechu.
Kino.
Pterocarpus draco.
Ficus indica.
Pistacia lentiscus.

## *From the Mineral Kingdom.*

Acidum sulphuricum.
Argilla.
Super-sulphas argillæ et potassæ.
Calx.—Carbonas calcis.
Plumbum.
Zincum.
Ferrum.
Cuprum.

## *VEGETABLE ASTRINGENTS.*

ASTRINGENCY in vegetables ſeems to be connected with a certain chemical principle, or at leaſt with ſome peculiarity of compoſition, ſince vegetable aſtringents uniformly poſſeſs certain chemical properties. The aſtringency is extracted both by water and alkohol, and theſe infuſions ſtrike a black colour with any of the ſalts of iron, and are capable of corrugating more or leſs powerfully dead animal matter.

Chemical inveſtigations have accordingly diſcovered two diſtinct principles in the vegetable aſtringents, one or both of which may probably give riſe to the aſtringent property. One of theſe, the Gallic Acid, is diſtinguiſhed by its property of ſtriking a deep black colour with the ſalts of iron: the other the Tanning Principle, or Tannin, is characterized by its ſtrong attraction to animal gelatin, with which it combines, and forms a ſoft ductile maſs, inſoluble in water. Theſe may be ſeparated by a ſolution of animal jelly, which unites with the tannin, and leaves the gallic acid pure.

As both theſe principles exiſt in all the ſtronger vegetable aſtringents, it is probable that the corrugating property by which the action of theſe ſubſtances as medicines is modified, depends on their combination, eſpecially as, in their action on dead matter, the change produced on the animal fibre by the gallic acid, promotes the combination of that fibre with the tanning principle.

QUERCUS ROBUR. Oak. *Monoec. Polyand. Amentaceæ. Cortex. Indigenous.*

THE bark of this tree poſſeſſes a large ſhare of aſtringency, which it yields to water. The infuſion contains both the gallic acid and the tanning principle in conſiderable quantity.

Oak bark has been uſed as a remedy in hæmorrhage, diarrhœa, and intermittent fever. Its doſe in powder is from 15 to 30 grains. The ſtrong infuſion or decoction of it is employed as an aſtringent gargle in cynanche, as an injection in leucorrhœa and profuſe menorrhagia, and as a fomentation in hæmorrhoids and prolapſus ani.

*Offic. Prep.*—Extr: Querc. *Dub.*

QUERCUS CERRIS. *Monoec. Polyand. Amentaceæ. Cyniphis nidus. Galla. Galls. South of Europe.*

THE tubercles, termed Galls, are found on the branches of this tree. Their production is occaſioned by the bark being pierced by an inſect of the cynips genus, to depoſite its egg. The juice exuding ſlowly, is inſpiſſated, and hardens. The beſt galls are heavy, knotted, and of a blue colour. They are nearly entirely ſoluble in water with the aſſiſtance of heat; this ſoluble active matter conſiſts of tannin in combination with gallic acid, $\frac{9}{10}$ths of the former with $\frac{1}{10}$th of the latter.

In medicine, galls are employed for the ſame purpoſes as oak-bark, and are uſed under the ſame forms. An ointment compoſed of the powdered galls with eight parts of ſimple ointment, is uſed as an aſtringent application to hæmorrhoidal affections.

TORMENTILLA ERECTA. Tormentil. *Icoſand. Polygyn. Senticoſæ. Radix. Indigenous.*

THE root of tormentil is ſtrongly aſtringent, with little flavour or bitterneſs. It has been uſed in diarrhœa, under the form of decoction, and in intermittent fever, in ſubſtance, in the doſe of from half a drachm to a drachm.

POLYGONUM BISTORTA. Biſtort. *Octand. Trigyn. Oleraceæ. Radix. Indigenous.*

THE root of this plant is a pure and very ſtrong aſtringent; as ſuch it has been uſed in diarrhœa and in intermittent fever, in a doſe from a ſcruple to a drachm.

ANCHUSA TINCTORIA. *Alkanet. Pentand. Monogyn. Aſperifol. Radix. South of Europe.*

THE cortical part of the root of this plant has a deep red colour, which is not extracted either by water or alkohol, but readily by expreſſed oils. It poſſeſſes a ſlight degree of aſtringency; but it is now only employed to communicate colour to ointments.

HÆMATOXYLON CAMPECHIANUM. Lignum Campechenſe. Logwood. *Decand. Monog. Lomentaceæ. Lignum. South America.*

LOGWOOD is of a deep red colour, has ſcarcely any ſmell; its taſte is ſweetiſh and aſtringent. Its active matter is extracted by water, and by alkohol; both ſolutions ſtrike a black colour with the ſalts of iron. It has been employed in medicine as an aſtringent, in diarrhœa and chronic dyſentery, under the form of the decoction, or the watery extract.

*Offic. Prep.*—Extr: Hæmatoxyl: Camp. *Ed.*

ROSA GALLICA. Roſa Rubra. Red Roſe. *Icoſand. Polyg. Senticoſ. Petala. South of Europe.*

THE petals of this ſpecies of roſe have a ſlight degree of aſtringency, which is moſt conſiderable before they are expanded, and it is in this ſtate that they are dried for uſe. The freſh leaves are made into a conſerve with ſugar, and the infuſion of the dried leaves, ſlightly acidulated, forms a pleaſant aſtringent gargle.

*Offic. Prep.*—Inf: Roſ: Gall. Conſ: Roſ: R. Syr: Roſæ. *Ed.*—Mel Roſæ. *Lond.*

ARBUTUS UVA URSI. Bears Whortle-Berry. *Decand. Monog. Bicorn. Folia. Europe, America.*

THE leaves of this plant have a bitter aſtringent taſte, without any odour. Their watery infuſion ſtrikes a deep black colour with the ſalts of iron, From its aſtringency, Uva Urſi has been employed in menorrhagia, and other fluxes, but more particularly in cyſtirrhœa, calculus, diabetes, and ulcerations of the urinary organs, in ſome of which affections its efficacy is greater than has of late been allowed. Its doſe is half a drachm of the powdered leaves, twice or thrice a-day.

MIMOSA CATECHU. Terra Japonica. Catechu, or Japan Earth. *Polygam. Monœc. Lomentac. Ligni Extractum. Eaſt Indies.*

THIS ſubſtance is obtained by boiling the interior wood of the above tree with water, the decoction is poured off and evaporated, and the tenacious extract thus obtained, is dried by expoſure to the air and ſun. It is in ſmall pieces, of a yellow or brown colour; it has a mucilaginous aſtringent taſte, and diſſolves entirely in the mouth. It is ſoluble in water, the impurities excepted, and is nearly entirely ſoluble in alkohol. Its ſolution in water, or in proof ſpirit, yields a copious precipitate with animal gelatin, and ſtrikes a black colour with ſalts of iron. It conſiſts of tannin, extractive matter, and mucilage.

Catechu is employed as an aſtringent, principally in diarrhœa, and is one of thoſe moſt effectual, and at the ſame time moſt convenient for exhibition. Its doſe may be from 15 to 30 grains. It is alſo uſed under the form of infuſion or tincture; and externally as a local aſtringent application in affections of the gums and mouth.

*Offic. Prep.*—Elect: Catech. Inf: Mim: Cat. T: Mim: Cat. *Ed.*

## KINO.

THIS ſubſtance is the produce of a tree a native of Africa; the botanical characters of which have not been aſcertained. It is of a dark-red colour, and has an aſtringent taſte, with a degree of bitterneſs. It is more reſinous than catechu, and is therefore leſs ſoluble in water. Its ſolution in water, as well as that in alkohol, ſtrikes a deep purple colour with ſulphat of iron, the latter even more ſo than the former. Its gallic acid ſeems therefore to be combined with its reſinous part. It yields a precipitate with animal gelatin, but ſcarcely ſo copious as that from catechu.

Kino is employed as an aſtringent in the ſame caſes as catechu, to which it is conſidered as ſuperior in aſtringent power. Its doſe is from 20 to 30 grains.

*Offic. Prep.*—T: Kino. *Ed.*

PTEROCARPUS DRACO. Sanguis Draconis. Dragon's Blood. *Diadelph. Decand. Papilionaceæ. Reſina. South America.*

THIS reſin has a dark-red colour, and a ſlightly aſtringent taſte. It is conſidered as much inferior to the catechu, and is now ſcarcely ever employed in medicine. Perhaps it is undervalued, as, from Prouſt's experiments, it appears to contain much tannin.

LACCA. Lac. Ficus Indica. *Polygam. Diœc. Reſina. Eaſt Indies.*

THIS reſinous matter is the exudation from the above tree, occaſioned by an inſect piercing it to collect it. It is imported under the varieties of Seed and Shell lac, which differ in little but in form. Both have been ſuppoſed to be aſtringents,

gents, and have ſometimes been uſed under the form of tincture, as an application to ſpungy gums.

PISTACIA LENTISCUS. Maſtiche. Maſtich. *Diœc. Pentan. Amentac. Reſina. South of Europe.*

THIS reſin is obtained by exudation. It has ſcarcely any ſmell or taſte. It was formerly employed as a mild aſtringent in leucorrhœa and gleet, but is now nearly diſcarded from practice.

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## *MINERAL ASTRINGENTS.*

OF theſe, the principal are the Mineral Acids, eſpecially the Sulphuric, and the combinations it forms with ſome of the metals and earths.

ACIDUM SULPHURICUM. Sulphuric Acid. Acidum Vitriolicum. Vitriolic Acid.

THIS acid is formed from the combination of ſulphur with oxygen to the point of ſaturation.

It is obtained by the combuſtion of ſulphur. The ſulphur, reduced to powder, is mixed with from one-eighth to one-tenth of its weight of nitrat of potaſh, by which its combuſtion, when begun, can be continued without the free acceſs of atmoſpheric air. It is thus burnt in a large leaden chamber; the ſulphuric acid which is ſlowly formed, is abſorbed by water placed in the bottom of the chamber; the acid liquor is concentrated, by expoſing it to heat in glaſs retorts, and the pure ſulphuric acid is thus obtained. It is of a thick conſiſtence, and has an apparent unctuoſity; its ſpecific gravity is 1850; when pure, it is colourleſs and tranſparent. It is highly corroſive, and poſſeſſes all the general acid properties in an eminent degree.

As a medicine, this acid is employed as an aſtringent and refrigerant. Its aſtringency is conſidered as ſuperior to that of any other acid. From this virtue it is uſed in hæmoptyſis, menorrhagia, diabetes, hectic, and dyſpepſia. In its concentrated ſtate its doſe can ſcarcely be meaſured. In the Pharmacopœias, therefore, it is ordered to be kept diluted. The Acidum Sululphuricum Dilutum conſiſts of one part of the rong acid with ſeven of water; it is given in a oſe from 10 to 30 drops. The Acidum Sulhuricum Aromaticum, conſiſts of the acid diated with alkohol impregnated with aromatics, nd is given in a ſimilar doſe. From its aſtrinency, this acid is generally added to gargles, hich are employed to check ſalivation, or reieve relaxation of the uvula. Externally mixd with lard, in the proportion of half a drachm an ounce, it has been uſed with advantage in ſora, and it has been given internally in the ame diſeaſe.

*Offic. Prep.*—Acid: Sulph: Dil. Acid: Sulph: romat. *Ed.*

### ARGILLA. Argil.

SOME of the combinations of this earth are mployed as aſtringents, and nearly all its ſaline ombinations poſſeſs an aſtringent power.

The Boles, of which the Armenian Bole Bolus Armena) is the chief, are argillaceous arths, impregnated with oxyd of iron; they were t one time employed as aſtringents, but are entirely inert, and are now expunged from practice.

SUPER-SULPHAS ARGILLÆ ET POTASSÆ. Alumen. Alum.

THIS is a ſalt compoſed chiefly of argillaceous earth and ſulphuric acid, the acid being in exceſs. It likewiſe always contains a ſmaller portion of potaſh, and frequently of ammonia. It is found native, or is prepared by expoſing alum ores, which are native compounds of argillaceous earth and ſulphur, to atmoſpheric air; the ſulphur abſorbing oxygen, forms ſulphuric acid, which unites with the argillaceous earth, and the formation of the alum is completed by the addition of potaſh or ammonia. It is then obtained pure by cryſtallization.

This ſalt is in large tranſparent maſſes; it has a ſtyptic taſte, with a degree of ſweetneſs. From the exceſs of its acid it reddens the vegetable colours. It is ſoluble in eighteen parts of cold, and in leſs than two of boiling water. The variety termed Roche or Rock Alum (Alumen rupeum) has a reddiſh colour from the preſence of a portion of iron, but its other properties are the ſame as thoſe of common alum.

Alum, from its aſtringent power, is employed to check hæmorrhagies and ſerous evacuations: it is thus given in menorrhagia, leucorrhœa, and diabetes. It has likewiſe been uſed, though leſs frequently, in intermittent fever, malignant ſmall-pox, and colica pictonum. Its doſe is from 5 to 15 grains. The addition of an aromatic is generally neceſſary, to prevent it from exciting nauſea, when it is given in the ſolid form. The beſt form of adminiſtering it, however, is that of the Alum Whey (Serum Aluminoſum), prepared by adding two drachms of powdered alum to a pint of hot milk; the doſe of this is 3 or 4 ounces. Externally alum is frequently uſed as the baſis of aſtringent gargles, and of injections uſed in gleet.

*Offic. Prep.*—Sulph: Alum: Exſ. P: Sulph: Alum: C. *Ed.*—Alum: Purific. Catap: Alum. Aq: Alum: C. *Lond.*

CALX. Lime. Calx Viva. Quicklime.

LIME is a ſimple earth, found abundantly in nature, in ſeveral ſtates of combination. It is obtained by expoſing the native compounds of it with carbonic acid to a moderately ſtrong heat. The acid is expelled, and the lime remains pure. It is ſoluble in water; the ſolution, which is known by the name of Lime Water (Aqua Calcis) has a ſtyptic taſte. As an aſtringent it has been employed in diabetes, and in diarrhœa. The doſe is one or two pounds in the courſe of the day.

*Offic. Prep.*—Aq: Calc. Ol: Lini cum Calce. *Edin.*

CARBONAS CALCIS. Carbonat of Lime.

THE various kinds of carbonat of lime, Chalk (Creta Alba), Crabs Claws (Chelæ Cancrorum), Oyſter Shells (Teſtæ Oſtreorum), are to be afterwards noticed as antacids; as although they are uſed in diarrhœa, they evidently prove uſeful, not by any real aſtringent power, but by correcting the acidity which ſo frequently occaſions or aggravates that diſeaſe.

*Offic. Prep.*—Potio Carb: Calc. Pulv: Carb: Calc: C. Troch: Carb: C. *Ed.*—Pulv: Chel: Canc: C. Pulv: Cret: Comp: cum Opio. *Lond.*

* * *

Lead, Zinc, Iron and Copper, muſt in ſtrict opriety be ranked as Aſtringents, ſince ſome their preparations are uſed on account of eir ſtyptic power.

LUMBUM. Lead.

This metal, when rendered active on the ſy-em by oxydation, or combination with acids, roduces very deleterious effects. Its mode of peration is not eaſily explained, but in part it ppears to be that of an aſtringent, and as ſuch is uſed externally in ſeveral affections, and as even been adminiſtered internally. The reparations of it that are employed are the Vhite Oxyd, or rather ſub-carbonat (Ceruſſa), nd the ſalt formed by its union with the ace-ous acid, the Acetis Plumbi.

ERUSSA. Ceruſe. White Lead.

This is the metal oxydated by being expoſed o the vapour of acetous acid; it appears alſo to e combined with carbonic acid. It is uſed as an external application to ſuperficial inflammation, in the form of powder or ointment.

*Offic. Prep.*—Ung: Oxid: Plumb: A. *Ed.*—P: Ceruſſ: Comp. *Lond.*

ACETIS PLUMBI. Ceruſſa Acetata. Saccharum Saturni. Acetite of Lead. Sugar of Lead.

THIS ſalt is prepared by ſaturating the ceruſe with acetous acid, by boiling them together. By evaporating the ſolution, a confuſedly cryſtallized maſs is obtained. Like the other preparations of lead it is a violent poiſon. It has been uſed internally, however, as a ſtyptic in profuſe menorrhagia, in a doſe of half a grain repeated every half hour. But the practice is ſcarcely admiſſible. Externally it is very freely employed diſſolved in water, as an application to ſuperficial inflammation, as an injection in gonorrhœa, and a collyrium in ophthalmia.

*Offic. Prep.*—Ung: Acet: Plumb. *Ed.*

ZINCUM. Zinc.

THE combination of the oxyd of this metal with ſulphuric acid, the Sulphat of Zinc (Sulphas Zinci), is the preparation of it that is employed as an aſtringent. Internally it has ſome-nes been given in dyſentery in a doſe of 2 or grains twice or thrice a-day. Externally is very frequently uſed as the baſis of aſtrin-nt injections in gonorrhœa, and collyria in hthalmia, in the proportion of 2 or 3 grains one ounce of water.

*Offic. Prep.* — Sol: Sulph: Zinc. *Ed.*—Aq: nc: Vit: cum Camph. *Lond.*

The Acetite of Zinc (Acetis Zinci) poſſeſſes ilar powers, and is uſed for the ſame pur-es.

RRUM. Iron.

THE Sulphat of Iron (Sulphas Ferri) is the paration of this metal, which ſeems more ticularly to have an aſtringent quality. It ather uſed, however, as a tonic than as an ingent.

RUM. Copper.

HE ſaline preparations of this metal ſhew a ſiderable degree of aſtringency, alongſt with orroſive quality. The ſalt reſulting from union with ſulphuric acid, (Sulphas Cupri), is the moſt active. A ſtrong ſtyptic ſolution is prepared by diſſolving a portion of it with alum in water, and adding ſulphuric acid, which has been in uſe to ſtop hæmorrhage from wounds.

*Offic. Prep.*—Sol: Sulph: Cupr: C. *Ed.*

The Acetite of Copper or Verdigriſe (Acetis Cupri vel Ærugo Æris) has likewiſe been applied to the eyes in certain forms of ophthalmia, in the form of ſolution or ointment, and ſeems to prove uſeful by its aſtringent power.

# *LOCAL STIMULANTS.*

## CLASS V.—EMETICS.

EMETICS are ſubſtances capable of exciting vomiting, independent of any effect ariſing from the mere quantity of matter introduced into the ſtomach, or of any nauſeous taſte or flavour.

The effects of an emetic, are an uneaſy ſenſation in the ſtomach, with nauſea and vomiting. While the nauſea only is preſent, the pulſe is feeble, quick and irregular, and the countenance pale: during vomiting the face is fluſhed, the pulſe is quicker, and it remains ſo during the intervals of vomiting. When the operation of vomiting has ceaſed, the nauſea goes off gradually; the patient remains languid, and often inclined to ſleep; the pulſe is weak, but becomes gradually ſlow and full, and the ſkin is commonly moiſt.

The general nature of vomiting is ſufficiently evident. The periſtaltic motion of the ſtomach is inverted, the diaphragm and abdominal muſcles are called into action by aſſociation, and the pylorus being contracted, the contents of the ſtomach are forcibly diſcharged. The periſtaltic motion of the upper part of the inteſtinal canal is likewiſe frequently inverted.

How this periſtaltic motion is thus inverted, it is difficult to explain. The ſubſtances which have this effect no doubt poſſeſs a ſtimulant power, but the effect is by no means produced in proportion to the degree of ſtimulant operation exerted on the ſtomach, and it has not been explained how ſuch an operation can invert the uſual motion.

Dr Darwin conſiders vomiting as the effect, not of increaſed action from the operation of a ſtimulus, but of diminiſhed action, ariſing from the diſagreeable ſenſation of nauſea. This being induced, the uſual motion is gradually leſſened,

l, ſtopt, and is at length inverted, which gives
ſe to the phenomena of vomiting.

The ſuſceptibility of vomiting is very diffe-
ent in different individuals, and is often conſi-
erably varied by diſeaſe.

Though nauſea generally accompanies vomit-
g, this is ſcarcely a neceſſary connection:
me emetics acting without occaſioning much
auſea, while others induce it in a much great-
r degree than is proportioned to their emetic
ower.

The feeble and low pulſe which accompanies
omiting, has been aſcribed to direct aſſociation
etween the motions of the ſtomach and thoſe
f the heart, or it may be owing to the nauſea
xcited, which being a diſagreeable ſenſation,
s equivalent to an abſtraction of ſtimulus.

It is ſuppoſed alſo, that a ſympathy exiſts be-
ween the ſtomach and the ſurface of the body,
o that the ſtate of the veſſels of the one part
s communicated to the veſſels of the other.
Hence vomiting is frequently followed by dia-
horeſis.

Emetics powerfully promote abſorption.

They often occaſion increaſed evacuation by the inteſtinal canal, more eſpecially when they have been given in too ſmall a doſe to excite vomiting, an effect ariſing from their ſtimulating power.

Laſtly, ſeveral of the effects of vomiting have been aſcribed to the agitation of the body, and to the compreſſion of the viſcera, by the action of the diaphragm and abdominal muſcles.

Emetics are employed in many diſeaſes.

When any morbid affection depends upon, or is connected with over-diſtention of the ſtomach, or the preſence of acrid indigeſtible matters, vomiting gives ſpeedy relief. Hence its utility in impaired appetite; acidity in the ſtomach; in intoxication, and where poiſons have been ſwallowed.

From the preſſure of the abdominal viſcera in vomiting, emetics have been conſidered as ſerviceable in jaundice ariſing from biliary calculi obſtructing the hepatic ducts.

The expectorant power of emetics, and their utility in cattarh and phthiſis, have been aſcribed to a ſimilar preſſure extended to the thoracic viſcera.

In the different varieties of febrile affections, much advantage is derived from exciting vomiting, eſpecially in the very commencement of the diſeaſe. In high inflammatory fever, it is conſidered as dangerous; and in the advanced ſtage of typhus it is prejudicial.

Emetics given in ſuch doſes as only to excite nauſea, have been found uſeful in reſtraining hæmorrhage.

Different ſpecies of dropſy have been cured by vomiting, from its having excited abſorption. To the ſame effect, perhaps, is owing the diſperſion of ſwelled teſticle, bubo, and other ſwellings, which has occaſionally reſulted from this operation.

The operation of vomiting is dangerous or hurtful in the following caſes; where there is determination of blood to the head, eſpecially in plethoric habits; in viſceral inflammation; in the advanced ſtage of pregnancy; in hernia, and prolapſus uteri, and wherever there exiſts extreme general debility.

The frequent uſe of emetics weakens the tone of the ſtomach.

An emetic ſhould always be adminiſtered in the fluid form. Its operation may be promoted by drinking any tepid diluent or bitter infuſion.

The individual emetics may be arranged under thoſe derived from the Vegetable, and thoſe from the Mineral kingdom.

EMETICS.

# EMETICS.

*From the Vegetable Kingdom.*

Callicocca ipecacuanha.
Scilla maritima.
Anthemis nobilis.
Sinapis alba.
Asarum europæum.
Nicotiana tabacum.

*From the Mineral Kingdom.*

Antimonium.
Sulphas zinci.
Sulphas cupri.
Sub-acetis cupri.

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Ammonia.
Hydro-sulphuretum ammoniæ.
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## EMETICS FROM THE VEGETABLE KINGDOM.

IPECACUANHA. Ipecacuan. Callicocca Ipecacuanha. Cephaëlis Ipecacuanha of Wildenow. *Pentand. Monogyn. Aggregatæ. Radix. South America.*

OF this root ſeveral varieties have been imported, but the aſh-coloured, or Peruvian ipecacuan, is the beſt, and is the one commonly met with. It is in ſmall wrinkled pieces, externally brown, internally whiter; has a faint ſmell, and a bitter, ſlightly acrid taſte. It contains both a reſinous and gummy matter. It is generally ſtated, that its emetic power, and, indeed its principal virtues, reſide in the former, though Dr Irving has affirmed that they depend on its gum. Its active matter is completely extracted by alkohol, proof-ſpirit or wine. Vinegar likewiſe diſſolves it, but at the ſame time greatly weakens its power. By decoction with water,

, its activity is greatly impaired, though the
ter diſtilled from it has ſcarcely any emetic
wer. It is even injured by being kept long
poſed in the ſtate of powder to the air and
ht.

Ipecacuan is the mildeſt of thoſe emetics,
ich are at the ſame time certain in their
eration. It merely evacuates the contents of
e ſtomach, without exciting violent vomiting,
extending its action beyond the ſtomach ;
d is hence adapted to many caſes where vio-
nt vomiting would be uſeleſs or improper.
he medium doſe of it as an emetic is 15 grains,
ough 20 or 30 may be taken with perfect
fety. Ipecacuan is likewiſe employed with
her intentions than as an emetic. It was at
ne time much celebrated as a remedy in dy-
ntery, given either in ſuch a doſe as to pro-
uce full vomiting, or rather in the quantity of
or 3 grains repeated every three or four
ours, till it occaſioned vomiting, diaphoreſis,
purging. It has been given in a ſimilar mode
obſtinate diarrhœa. In ſpaſmodic aſthma, it is
xhibited in a full doſe to relieve the paroxyſm ;
nd in a doſe of 3 or 4 grains continued every
morning

morning for ſome weeks to prevent the return of the diſeaſe. In hæmorrhagies it is given in nauſeating doſes, the nauſea diminiſhing the force of the circulation. Combined with opium it forms a very powerful ſudorific.

*Offic. Prep.*—P: Ipecac: et Opii. Vin: Ipecac. *Edin.*

SCILLA MARITIMA. Squill. *Hexand. Monogyn. Liliaceæ. Radix. South of Europe.*

SQUILL is the bulbous root of a plant growing on the ſandy ſhores of Spain and Italy. It has little ſmell; its taſte is bitter and acrid, and it is capable of inflaming the ſkin; its acrimony is leſſened by drying; its bitterneſs is little impaired. In drying it loſes about four-fifths of its weight. Its active matter is extracted by water, alkohol, and acetous acid. The latter is the ſolvent commonly employed, as it beſt covers its nauſeous taſte.

Squill, when given in a ſufficient doſe, excites vomiting, though it is ſeldom uſed with that intention. The vinegar of ſquill acts as an emetic in a doſe of 2 or 3 drachms, as does the ſyrup when given in double that quantity; and either of them is ſometimes given in pertuſſis. This root is, however, much more uſed as a diuretic and expectorant; uſes of it which are afterwards to be noticed.

*Offic. Prep.*—Acet: Scill: Mar. Pil: Scill. Syr: Scill: Mar. *Ed.*—Cons: Scill. Tinct: Scill. *Lond.*

ANTHEMIS NOBILIS. Chamomile. (See p. 189.)

A STRONG infuſion of chamomile flowers in tepid water excites vomiting, and a weaker infuſion is often employed to quicken the action of other emetics.

SINAPIS ALBA. Muſtard. *Tetradyn. Siliq. Siliquoſæ. Semen. Indigenous.*

MUSTARD-SEED in powder, given in the doſe of a tea-ſpoonful, mixed with water, operates ſpeedily as an emetic. From its ſtimulant quality, it has been recommended in preference to other emetics in apoplexy and paralytic affections, and has ſometimes been found to excite vomiting, when theſe had failed.

ASARUM EUROPÆUM. Aſarabacca. *Dodecand. Monogyn. Sarmentac. Folia. Indigenous.*

THE leaves and root of this plant, prior to the introduction of ipecacuan, were frequently employed on account of their emetic power; the doſe of the dried leaves was 20 grains: of the dried root, 10 grains. As they were occaſionally violent in their operation, they have fallen into diſuſe.

NICOTIANA TABACUM. Tobacco. (See p. 133.)

THE leaves of this plant excite ſevere nauſea and vomiting even in a ſmall doſe; and the ſame effects have followed from their external application to the region of the ſtomach. Tobacco is, however, rarely employed as an emetic.

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### *EMETICS FROM THE MINERAL KINGDOM.*

ANTIMONIUM. Stibium. Antimony.

THIS metal in its various ſtates of preparation poſſeſſes a general evacuant power, and furniſhes ſome of our moſt powerful cathartics, diaphoretics, and expectorants. All its preparations in larger doſes act as emetics, and ſeveral of them are in common uſe for that purpoſe. It is therefore under this claſs that its general hiſtory may be introduced.

Antimony, in the modern nomenclature, is the name given to a peculiar metal. This metal is found in nature, moſt abundantly combined with ſulphur; and to this ore the name of Antimony was once generally given. To diſtinguiſh it from the pure metal, it is named Crude Antimony, or more properly Native Sulphuret of Antimony, the ſimple name Antimonium or Stibium being appropriated to the metal itſelf.

The native ſulphuret is of a grey or blue colour; has a ſhining ſurface, and ſtriated texture. To free it from the earthy matters with which it is mixed, when dug from the earth, it is fuſed. Its luſtre is greater the more completely it is purified. The proportions of its principles are various; ſometimes they are nearly equal; in other ſpecimens the quantity of metal is larger.

The pure metal, obtained from the ore, is of a ſilvery white colour, and plated texture, moderately hard, and very brittle; eaſily fuſible, and even volatilized by a heat not very intenſe; oxydated by expoſure to the air at a temperature moderately increaſed; and when oxydated, capable of combining with the greater number of the acids.

The preparations of antimony, though of very different degrees of ſtrength, ſtill retain the ſame general mode of action, and poſſeſs of courſe the ſame medicinal virtues. They do not exert any general ſtimulant operation, but are always directed in their action to particular parts, ſo as to occaſion ſome ſenſible evacuation.

The principal general medicinal application of antimony has been for the cure of febrile affections. It is given ſo as to induce vomiting or purging, diaphoreſis being alſo promoted; and exhibited in this manner in the commencement of the diſeaſe, it has been conſidered as capable of cutting ſhort its progreſs. In the latter ſtage of fever, where debility prevails, its uſe is inadmiſſible. Its efficacy has in general been aſcribed to the evacuation it occaſions: others have conſidered it, apparently with little reaſon, as exerting an action ſpecific or peculiar in itſelf, and not explicable on the known effects it produces.

Antimonials have been found to have ſimilar good effects in intermittent as in continued fever, as well as in ſeveral of the phlegmaſiæ and exanthemata; and even in ſeveral of the profluviæ.

As an emetic, antimony is diſtinguiſhed for the certainty, extent, and permanence of its operation. The action it excites in the ſtomach is both more forcible, and continues for a longer time, than that from other emetics, and hence it produces more complete evacuation, and occaſions in a greater degree all thoſe effects which reſult from the action of vomiting. Its action is alſo leſs local. It is very generally extended to the inteſtinal canal, ſo as to produce purging, and very frequently to the ſurface of the body, ſo as to occaſion diaphoreſis or ſweat.

Of the preparations of antimony, it is neceſſary to take only a very curſory view, as they are to be more fully noticed in another part of the work. They may be arranged under three diviſions: thoſe in which the metal is combined with ſulphur; thoſe in which it is oxydated; and thoſe in which it is brought into a ſaline ſtate by combination with acids.

Of the firſt, the Levigated Antimony (Antimonium Præparatum), which is merely the native ſulphuret reduced to a ſtate of mechanical diviſion, is the only preparation. It has been given as a diaphoretic, eſpecially in chronic rheumatiſm, in a doſe from 15 grains to 1 drachm, but it is very inert.

The oxyds of antimony differ in their qualities according to the degree of oxygenation. From the late reſearches of Prouſt, it appears, that the metal is capable of two degrees, being in one combined with 23 parts of oxygen in the 100; in the other, with 30 parts. But theſe oxyds are capable of combining with proportions of ſulphuret of antimony; and combinations of this kind conſtitute ſeveral well known antimonial preparations. As medicines, the oxyds of antimony are uncertain in their operation, from varying in their compoſition, and from being influenced by the ſtate of the ſtomach with regard to acidity.

Oxydum Antimonii per Nitratem Potaſſæ, formerly Crocus Antimonii, is prepared by deflagrating ſulphuret of antimony with an equal part of nitrat of potaſh. The greater part of the ſulphur is oxydated and diſſipated; a brown oxyd of antimony remains, combined, according to Prouſt, with one-fourth ſulphuret of antimony. It acts as a diaphoretic, emetic, or cathartic, but is ſo uncertain in its effects that it is never preſcribed. It ſerves for the preparation of ſome other antimonials.

Oxydum Antimonii cum Sulphure Vitrificatum, formerly Vitrum Antimonii.—This is prepared by expoſing ſulphuret of antimony to atmoſpheric air at a high temperature. The ſulphur is diſſipated, and the antimony oxydated and vitrified. It ſtill retains combined with it a portion of ſulphur, or, according to Prouſt, one-ninth of ſulphuret of antimony. It alſo is ſo uncertain in its operation, and occaſionally ſo violent, that it cannot be medicinally employed.

Oxydum Antimonii vitrificatum cum Cera.—This is prepared by expoſing the powder of the preceding preparation with an eighth part of wax to heat. It is thus rendered milder, probably by part of its oxygen being abſtracted. Though once highly celebrated in dyſentery, in a doſe of from 5 to 15 grains, it has been long in diſuſe.

Oxydum Antimonii Album, formerly Antimonium Calcinatum.—This is prepared by deflagrating ſulphuret of antimony with a large quantity of nitrat of potaſh, (three times its weight), ſo that the metal is ſaturated with oxygen. It is comparatively inactive, and does not excite vomiting in a doſe leſs than a ſcruple or half a drachm. In ſmaller doſes, it has been uſed as a diaphoretic.

Oxydum Antimonii cum Phoſphate Calcis, formerly Pulvis Antimonialis.—This is prepared by expoſing to heat ſulphuret of antimony and bone-ſhavings. The reſult is oxyd of antimony and phoſphat of lime, in the proportion of 57 of the former and 43 of the latter, part of the oxyd being in a vitrified ſtate. It is ſimilar in compoſition to the celebrated James's Powder, for which it is deſigned as a ſubſtitute. It acts as a diaphoretic, emetic, and cathartic, and is given at the commencement of febrile affections, to cut ſhort their progreſs, in a doſe of 5 or 8 grains, repeated, if neceſſary, after an interval of five or ſix hours.

Sulphuretum Antimonii Præcipitatum, formerly Sulphur Auratum Antimonii.—This is prepared by boiling ſulphuret of antimony with a ſolution of potaſh, and adding to the filtered liquor, ſulphuric acid: it is a combination of oxyd of antimony with ſulphurated hydrogen and ſulphur. In a doſe from 5 to 10 grains, it produces the uſual effects of antimonials, and has been employed as a remedy in fever; but from the uncertainty of its operation, it is diſcarded from practice.

The preparation termed Kermes Mineral, and which is merely the precipitate that ſubſides on cooling from the liquor formed by the boiling a ſolution of potaſh on ſulphuret of antimony, is ſimilar to the preceding, being a combination of oxyd of antimony with ſulphurated hydrogen. It is uſed in a ſimilar doſe.

Of the ſaline combinations of antimony, the only ones medicinally employed are the Muriat and the Tartrite.

The Muriat (Murias Antimonii) is ſo acrid that it can only be uſed externally as an eſcharotic.

Tartris Antimonii cum Potaſſa, formerly Antimonium Tartariſatum vel Tartarum Emeticum.—It is obtained by boiling an oxyd of antimony with acidulous tartrite of potaſh; the exceſs of tartarous acid diſſolves the oxyd, and a triple ſalt is obtained by cryſtallization. It is the moſt uſeful of all the antimonial preparations. Its action is not dependent on the ſtate of the ſtomach, and being ſoluble in water, its doſe is eaſily managed, while it alſo operates more ſpeedily. In a doſe of a grain and a half or two grains, it generally acts powerfully as an emetic, and is employed whenever we wiſh to obtain the effects which reſult from full vomiting. In a ſmaller doſe, it acts as a diaphoretic, expectorant, and cathartic.

Vinum Antimonii Tartarizati. This is merely a ſolution of the preceding preparation in white wine, and is deſigned to afford a pleaſant form for its exhibition. One ounce prepared according to the Edinburgh Pharmacopœia contains 2 grains, and is a doſe. That according to he formula given by the London College is ouble this ſtrength.

ULPHAS ZINCI. Sulphat of Zinc.

This ſalt is ſometimes uſed as an emetic, on ccount of the ſuddenneſs of its operation, eſpe-ially where poiſonous ſubſtances have been re-ceived into the ſtomach. It is given in a doſe rom 5 grains to 20, diſſolved in water.

ULPHAS CUPRI. Sulphat of Copper.

This preparation of Copper, in a doſe from 1 o 5 grains, diſſolved in water, has been uſed as n emetic, particularly in incipient phthiſis; ut it ſeems in no reſpect preferable to more ſafe metics. The ſame may be ſaid of the Acetite f Copper (Acetis Cupri) which has been given or the ſame purpoſe, in a doſe of one or two rains diſſolved in an ounce of water.

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The ſolution of Ammonia in water (Aqua Ammoniæ) excites vomiting, a tea-ſpoonful being given in a cupful of tepid water. It operates without violence, but its acrimony renders it unpleaſant in ſwallowing.

Hydro-Sulphuretum Ammoniæ. Hydro-Sulphuret of Ammonia.—This combination is obtained by paſſing a ſtream of ſulphurated hydrogen through a ſolution of ammonia in water. It acts with energy on the ſtomach, inducing nauſea in a ſmall doſe, and being capable of occaſioning vomiting. It is ſcarcely uſed as an emetic, but rather as a nauſeating remedy. The principal application of it is in diabetes, with the view of reducing the morbid appetite and increaſed action of the ſtomach. It is given in a doſe of from 5 to 15 drops, twice a-day.

## Class VI.—CATHARTICS.

Cathartics are medicines which quicken or increaſe the evacuation from the inteſtines, or which, when given in a ſufficient doſe, excite purging. They evidently act by augmenting the natural periſtaltic motion, from their ſtimulant operation on the moving fibres of the inteſtines, whence the contents of the canal are more quickly propelled. The greater number, or perhaps all of them, ſeem likewiſe to ſtimulate the extremities of the exhalant veſſels terminating on the internal ſurface of the inteſtines, and hence the evacuations they occaſion are not only more frequent, but thinner, and more copious.

Beſides theſe immediate actions, the ſtimulant operation of cathartics appears to be more or leſs extended to neighbouring organs, and hence they promote the ſecretion and diſcharge of the bile, and other fluids uſually poured into the inteſtinal canal. It is alſo exerted on the ſtomach, ſo as to occaſion a more quick evacuation of the contents of that organ by the pylorus.

Beſides the differences between individual cathartics in quickneſs, ſlowneſs, or other circumſtances attending their operation, there is a general difference in the mode in which they act, from which they may be, and uſually have been ranked under two diviſions. Some operate mildly, without exciting any general affection of the ſyſtem, without even perceptibly ſtimulating the veſſels of the inteſtines, and hence they merely evacuate the contents of the canal. Others are much more powerful ſtimulants: they always occaſion an influx of fluids from the exhalant veſſels, and neighbouring ſecreting organs: they extend their ſtimulus to the ſyſtem in general, and if taken in too large a doſe, excite inflammation on the ſurface of the inteſtines. The former are diſtinguiſhed by the title of Laxatives; the latter are termed Purgatives, and the ſtronger of them Draſtic Purgatives.

Cathartics, as medicines, are capable of fulfilling various indications.

Where there exiſts a morbid retention of the contents of the ſtomach, where theſe contents are acrid, or where extraneous bodies are preſent, they are calculated by their evacuating power to relieve the ſymptoms ariſing from theſe affections, and hence their utility in conſtipation, colic, dyſentery, and a variety of febrile affections. Partly by exciting the inteſtines to action, and partly by extending their ſtimulus to the other abdominal viſcera, cathartics are of ſervice in dyſpepſia, hypochondriaſis, amenorrhœa, jaundice, and viſceral obſtructions.

By their power of ſtimulating the exhalant veſſels, on the internal ſurface of the inteſtinal canal, and cauſing a larger portion of fluid to be poured out, cathartics are capable of producing a diminution of the fluids with reſpect to the general ſyſtem, and of courſe cauſe an abſtraction of ſtimulus. Hence purging is a principal part of what is termed the Antiphlogiſtic Regimen, and is employed as a remedy of much power in highly inflammatory diſeaſes.

From the ſame power of cauſing effuſion of fluid, is to be explained the utility of cathartics in the various ſpecies of dropſy. A balance is preſerved in the ſyſtem between exhalation and abſorption, ſo that when one is increaſed, the other is ſo alſo. The increaſed ſecretion and diſcharge of ſerous fluid, which cathartics occaſion, cauſes an increaſed abſorption; whence the affuſed fluid in dropſy is frequently taken up and removed.

Partly by the ſerous evacuation which cathartics occaſion, and partly by the derivation of blood they make from the head, they are highly uſeful in the prevention and cure of apoplexy, all comatoſe affections, mania, phrenitis and headach.

By a change in the diſtribution of the blood, it has been ſuppoſed that purging determines from the ſurface of the body; and hence in a great meaſure has been explained its utility in ſmall-pox and ſome other eruptive diſeaſes.

The adminiſtration of cathartics is rendered improper by inflammation of the ſtomach or inteſtines, or tendency to it, and by much debility. Several cautions are likewiſe requiſite in their exhibition. The nauſea or griping they frequently produce, may be obviated by the addition of an aromatic, or by giving them in divided doſes. The more powerful cathartics ſhould alſo always be given in the latter mode;

and in general they irritate leſs when given diffuſed in a fluid than when given in a ſolid form.

The different cathartics may be conſidered under the two diviſions of Laxatives and Purgatives: the former being mild in their operation, and merely evacuating the contents of the inteſtines; the latter being more powerful, and even extending their ſtimulant operation to the neighbouring parts.

# CATHARTICS.

## A.—*Laxatives.*

Manna.

Cassia fistula.

Tamarindus indica.

Ricinus communis.

Sulphur.

Magnesia.

## B.—*Purgatives.*

Cassia senna.

Rheum palmatum.

Convolvolus jalapa.

Helleborus niger.

Bryonia alba.

Cucumis colocynthis.

Momordica elaterium.

Rhamnus catharticus.

Aloe perfoliata.

Convolvolus scammonia.

Cambogia gutta.

Sub-murias hydrargyri.

SULPHAS MAGNESIÆ.
SULPHAS SODÆ.
SULPHAS POTASSÆ.
SUPER-TARTRIS POTASSÆ.
TARTRIS POTASSÆ.
TARTRIS POTASSÆ ET SODÆ.
PHOSPHAS SODÆ.

MURIAS SODÆ.
TEREBINTHINA VENETA.
NICOTIANA TABACUM.

## *LAXATIVES.*

MANNA. Manna. Fraxinus Ornus. *Polygam. Diœc. Aſcyroid. Succus concretus. South of Europe.*

THIS ſubſtance, though afforded by ſeveral vegetables, is uſually obtained from different ſpecies of the aſh-tree, which are cultivated in Sicily and Calabria. It is procured by ſpontaneous exudation, but more copiouſly by inciſions made in the bark of the trunk. The juice, which exudes, ſoon becomes concrete. When it exudes ſlowly, the manna is more dry and white, forming Flake Manna. When the exudation is more copious, the juice is of a darker colour, and concretes into a ſoft unctuous-like maſs, leſs pure than the other.

Manna has a very ſweet taſte, and poſſeſſes the general chemical properties of ſaccharine matter; it is entirely ſoluble in water and alkohol. Although ſugar in its unrefined ſtate proves laxative, manna is ſo in a greater degree.

The doſe of manna, as a laxative, is from one to two ounces to an adult. On account of its ſweetneſs, it is frequently given to children, or is combined with other purgatives. Though mild in its operation, it is apt to produce flatulence and griping.

*Offic. Prep.*—Syrup: Mannæ. *Dub.*

CASSIA FISTULA. Purging Caſſia, or Caſſia in pods. *Decand. Monog. Lomentaceæ. Fructus; Pulpa Fructûs. Egypt; E. and W. Indies.*

THE fruit of this tree is in pods, about an inch in diameter, and ten or twelve in length. The pulp they contain is of a black colour, and has a ſweet taſte, with a ſlight degree of acidity. It is extracted by boiling the bruiſed pods in water, and evaporating the decoction. It is ſoluble in water. According to Vauquelin's analyſis of it, it contains, beſides the fibrous part, gluten, gelatin, gum, and ſaccharine matter.

This pulp proves gently laxative in a doſe of four or ſix drachms; in the large doſe neceſſary to occaſion purging, it is apt to induce nauſea or griping. It is an ingredient in the Electuarium Sennæ.

*Offic. Prep.*—Elect: Caſs: Fiſt. *Ed.*

Tamarindus indica. Tamarind. *Monadelph. Triand. Lomentaceæ. Fructus conditus. Eaſt and Weſt Indies, America, Arabia.*

The pod of this tree includes ſeveral large hard beans, with a brown viſcid pulp, very acid. This pulp, mixed with the ſeeds and ſmall fibres, and with a quantity of unrefined ſugar, forms the Tamarinds of the ſhops. Vauquelin found it to contain, beſides the ſugar mixed with it, citric and malic acids, acidulous tartarite of potaſh, free tartarous acid, gelatin, mucilage, and fibrous matter.

The pulp of tamarinds, beſides its virtues as an acid, proves laxative, when taken to the extent of an ounce, or an ounce and a half. It is generally added to other cathartics, which are given in the form of infuſion, with the views of promoting their operation, and covering their taſte. It is an ingredient in the Elect. Sennæ.

*Offic. Prep.*—Inf: Tam: Ind: cum Caſs: Sen. *Ed.*

There are ſome other ſweet fruits which have a laxative quality, as the Fig (Ficus Carica) and the Prune (Prunus Domeſtica.). Theſe are ſometimes uſed in domeſtic practice, and are ingredients in the Elect. Sennæ.

RICINUS COMMUNIS. Palma Chriſti. *Monœc. Monadelph. Tricoc. Oleum; Semen. W. Indies.*

AN oil is obtained by expreſſion or decoction from the nuts of this tree, which is uſed in medicine in this country, under the name of Caſtor Oil. When obtained by decoction of the bruiſed ſeeds in water, it is purer and leſs acrimonious than when obtained by expreſſion. It is of a yellowiſh colour, and has ſcarcely any peculiar taſte or ſmell.

As a laxative, caſtor oil acts mildly and effectually, and at the ſame time very quickly; it is the purgative particularly employed where any ſtimulant operation would be hurtful. Its doſe is one ounce. It is taken floating on peppermint-water; mixed with any ſpiritous liquor, or any purgative tincture, as that of ſenna; or diffuſed in water by the medium of gum, ſugar, or the yolk of an egg.

In Ileus or bowel colic! when rubbed upon the abdomen, it may much promote the action of laxatives.

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FROM the Mineral Kingdom, two laxatives are derived, Sulphur and Magneſia.

SULPHUR is a ſimple inflammable ſubſtance, found in nature nearly pure, and likewiſe in combination with ſeveral of the metals. The ſulphur of commerce is the produce of volcanic countries. It is naturally mixed with earthy matter, from which it is freed by ſublimation, forming the Sulphur Sublimatum, Flores Sulphuris, or Flowers of Sulphur.

Pure ſulphur is of a light yellow colour; is inſipid; has a faint ſmell, when rubbed or heated; is very fuſible and volatile; and when heated in atmoſpheric air, burns with a blue flame and ſuffocating fumes. It is inſoluble in water or alkohol, but is diſſolved by oils, and combines with the alkalies, ſeveral of the earths, metals, and metallic oxyds.

Sulphur, in a doſe of 2 or 3 drachms, acts as a laxative, and ſo mildly, that it is often uſed in hæmorrhoidal affections. It likewiſe paſſes off by the ſkin, and is adminiſtered internally, and is applied externally in pſora. It is beſt given in the form of electuary.

*Offic. Prep.*—Ol: Sulph. Ung: Sulph. *Ed.* Troch: Sulph. *Lond.*

MAGNESIA is a ſimple earth, not found pure in nature, but abundantly combined with certain acids; and from theſe ſaline combinations, it is obtained by proceſſes, to be afterwards noticed. Either pure, or in the ſtate of carbonat, it is uſed as an antacid and laxative, in a doſe of a drachm or more. Its laxative operation is generally conſidered as owing to its meeting with an acid in the ſtomach, and forming a ſaline combination which has that power.

*Offic. Prep.*—Troch: Magn. *Lond.*

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## *PURGATIVES.*

CASSIA SENNA. Senna. *Decand. Monogyn. Lomentaceæ. Folia. Egypt, Arabia.*

THE dried leaves of this plant are of a yellowiſh green colour; have a faint ſmell, and a bitter taſte. Their active matter is extracted both by water and alkohol by infuſion. By decoction with water, its activity is much impaired.

Senna is a purgative frequently employed. It is always given in the form of the watery infuſion, 2 or 3 drachms being infuſed in 4 or 6 ounces of water, with the addition of a few coriander ſeeds, to cover its flavour, and obviate griping. It is alſo frequently combined with manna, with tamarinds or with acidulous tartarite of potaſh.

*Offic. Prep.*—Elect: Caſs: Senn. Extr: Caſs: Senn. Inf: Tam: Ind. cum Caſſ: Sen. T: Caſs: Senn: C. *Ed.*—Inf: Senn: Simp. Inf: Senn: Tart. P: Senn: C. *Lond.*

RHEUM PALMATUM. Rhubarb. *Enneand. Trigyn. Oleraceæ. Radix. Tartary.*

BESIDES the Rheum Palmatum, two other ſpecies, the Rheum Undulatum, and Rheum Compactum, are cultivated with the view of obtaining their roots, to be uſed in medicine; nor is any conſiderable difference, it is ſaid, to be obſerved between them. The beſt rhubarb is imported from Turkey in ſmall pieces, with a large hole in the middle. It is of a lively yellow colour, with ſtreaks of white; has a ſmell peculiar, and ſomewhat aromatic; and a bitter ſlightly ſtyptic taſte. Another kind is imported from the Eaſt Indies, or rather from China, in larger maſſes, more compact and hard, heavier, leſs friable than the other, and having leſs of an aromatic flavour. Rhubarb, cultivated in this country, has been prepared equal to either of the others, but in general the Britiſh Rhubarb is much inferior.

Rhubarb contains a gummy and a reſinous part, and likewiſe a portion of gallic acid. Proof-ſpirit diſſolves all its active matter. The watery infuſion is more purgative than the ſpiritous. The Chineſe rhubarb ſeems to be more aſtringent than the Turkey. Every kind of it contains a quantity of earthy matter, chiefly lime, combined with ſulphuric and citric acids. This is generally more abundant in the Turkey rhubarb than in the others.

The doſe of rhubarb as a cathartic is one ſcruple or half a drachm. Alongſt with its purgative operation, it exerts a moderately aſtringent power, and has hence been conſidered as peculiarly adapted to diarrhœa, any acrid matter being evacuated before it acts as an aſtringent. From the conjunction of bitterneſs with theſe qualities, it is likewiſe often uſed in dyſpepſia and hypochondriaſis, to obviate coſtiveneſs. Its aſtringent property is diminiſhed in the watery infuſion.

*Offic. Prep.*—Inf: Rhei P. Pil: Rhei C. T. Rhei P. T. Rhei cum Aloe. Vin: Rhei Palm. *Ed.*

CONVOLVULUS JALAPA. Jalap. *Pentand. Monogyn. Campanac. Radix. Mexico.*

THE dried root of jalap is imported in thin tranſverſe ſlices; ſolid, hard, and heavy; of a dark grey colour, and ſtriated texture. It has little ſmell; its taſte is bitter and ſubacrid.

Jalap contains a reſinous and a gummy matter, its purgative quality reſiding in the former. Proof-ſpirit is its proper menſtruum.

This root is an active purgative, producing a conſiderable degree of ſtimulus on the inteſtines. Its medium doſe is half a drachm. Beſides being given alone, it is very frequently uſed to quicken the action of other cathartics; of mild muriat of mercury for example; or is combined with others, which are ſuppoſed to render it leſs ſtimulating, as with the acidulous tartarite of potaſh.

*Offic. Prep.*—Extr: Conv: Jalap. P: Jalap: C. T. Conv: Jal. *Ed.*

HELLEBORUS NIGER. Melampodium. Black Hellebore. *Polyand. Polygyn. Multiſiliq. Radix. Auſtria, Italy.*

THE root of this plant conſiſts of ſmall fibres attached to one head, externally dark-coloured, internally white. Its taſte is very acrid, but the acrimony is much impaired by drying and keeping.

Its medicinal power ſeems principally to depend on its reſinous part. By decoction with water it yields half its weight of gummy matter, with ſome reſin; the extract obtained by inſpiſſation is milder than the root itſelf. Its diſtilled water, it is affirmed, is acrid, and even cathartic.

Black hellebore root is a very violent cathartic, in a doſe from 10 to 20 grains; ſo violent, indeed, that it is ſcarcely ever uſed. On its cathartic power probably depends any advantage that may be derived from its adminiſtration in mania and melancholia, in which diſeaſes it was highly celebrated by the ancients. In dropſy it has been employed as a hydragogue cathartic. It was likewiſe ſtrongly recommended by Mead as an emmenagogue, though with others it has ſeldom been ſucceſsful.

*Offic. Prep.*—T: Helleb: N. *Ed.*

BRYONIA ALBA. Bryony. *Monœc. Syngenes. Cucurbitæ. Radix. Indigenous.*

THE root of this plant, when recent, is highly acrid; by drying it becomes milder. In a doſe of 20 or 30 grains of the dried root, it acts as a ſtrong cathartic, and generally alſo as a diuretic. It is however ſomewhat uncertain in its operation, and is little uſed.

CUCUMIS COLOCYNTHIS. Colocynth. *Monœc. Syngenes. Cucurbitæ. Fructûs pulpa. Syria.*

THE part of this plant uſed in medicine, is the dried ſpongy or medullary part of the fruit. The taſte of this is intenſely bitter. Boiled in water it gives out a large portion of mucilage, leſs active than the colocynth itſelf. Alkohol alſo diſſolves only part of its active matter.

Colocynth is one of the moſt draſtic purgatives, and is even apt to occaſion violent ſymptoms. Its doſe is from 3 to 6 grains. It is ſeldom however given by itſelf, being rather uſed to promote the operation of other cathartics. Combinations of it with jalap, aloes, or mild muriat of mercury, are thus given in obſtinate conſtipation, in mania, and coma. Its infuſion has been recommended as an anthelmintic.

*Offic. Prep.*—Pil: Aloes cum Colocynth. *Ed.*

MOMORDICA ELATERIUM. Wild Cucumber. *Monœc. Syngenes. Cucurbit. Fecula; Fructus. South of Europe.*

THE expreſſed juice of the fruit of this plant, on ſtanding, depoſites a fecula, which, when dried, has been known by the name of Elaterium. It is the moſt violent of all the cathartics, and has been exhibited only in the moſt obſtinate caſes. Its doſe is half a grain, repeated every hour, or every ſecond hour, till it operates.

RHAMNUS CATHARTICUS. Buckthorn. *Pentand. Monogyn. Dumoſæ. Baccarum ſuccus. Indigenous.*

THE expreſſed juice of buckthorn berries has a cathartic power. Made into a ſyrup by boiling with ſugar, it has been given in a doſe of an ounce. It is diſagreeable however in its operation, and is ſeldom uſed.

*Offic. Prep.*—Syr: Rhamn: C. *Ed.*

ALOE PERFOLIATA. Aloe Socotorina. Aloe Barbadenſis. Socotorine, Barbadoes, or Hepatic Aloes. *Hexand. Monogyn. Liliaceæ. Succus ſpiſſatus. Africa, Aſia, America.*

THE various kinds of aloes differ in their purity, and likewiſe in their ſenſible qualities.

The Socotorine is conſidered as the pureſt. It is in ſmall pieces of a reddiſh-brown colour. The Barbadoes Aloes is in large maſſes, of a lighter colour, and having an odour much ſtronger and more unpleaſant than the former. The Hepatic is of a ſimilar kind. The Cabbaline is ſtill more impure, and is weaker in its power. They are all the expreſſed juice of the above-mentioned ed ſpecies, reduced to a ſolid conſiſtence by evaporation. Their taſte is intenſely bitter; their odour diſagreeable. They conſiſt of gum and reſin, the former being in larger quantity. The ſmell and taſte reſide principally in the gum, as do the principal virtues of the aloes.

Aloes is a warm ſtimulating purgative, uſed principally to obviate coſtiveneſs. Its medium doſe is from 5 to 15 grains, nor does a larger quantity operate more effectually. Its operation is exerted upon the large inteſtines, principally on the rectum, and hence its purgative effect is ſlow and moderate. The ſtimulant action of aloes, it has been ſuppoſed, may be extended to the uterus, whence it is alſo uſed as an emmenagogue, and its exhibition is deemed improper during pregnancy: It has alſo been ſuppoſed, that its uſe is apt to induce or aggravate hæmorrhoidal affections.

*Offic. Prep.*—Pil: Aloes. Pil: Al: cum Aſſafœt. Pil: Aloes cum Colocynth. P: Aloes cum Myrrh. T: Aloes S. T: Aloes Æth. T: Aloes cum Myrrh. Vin: Aloes Socc. *Ed.*—Pil: Aloes Comp. Pulv: Al: cum Canella. Pulv: Al: cum Guiac. Pulv: Aloes cum Ferro. T: Aloes C. *Lond.*

RHAMNUS CATHARTICUS. Buckthorn. *Pentand. Monogyn. Dumoſæ. Baccarum ſuccus. Indigenous.*

THE expreſſed juice of buckthorn berries has a cathartic power. Made into a ſyrup by boiling with ſugar, it has been given in a doſe of an ounce. It is diſagreeable however in its operation, and is ſeldom uſed.

*Offic. Prep.*—Syr: Rhamn: C. *Ed.*

ALOE PERFOLIATA. Aloe Socotorina. Aloe Barbadenſis. Socotorine, Barbadoes, or Hepatic Aloes. *Hexand. Monogyn. Liliaceæ. Succus ſpiſſatus. Africa, Aſia, America.*

THE various kinds of aloes differ in their purity, and likewiſe in their ſenſible qualities.

The Socotorine is conſidered as the pureſt. It is in ſmall pieces of a reddiſh-brown colour. The Barbadoes Aloes is in large maſſes, of a lighter colour, and having an odour much ſtronger and more unpleaſant than the former. The Hepatic is of a ſimilar kind. The Cabbaline is ſtill more impure, and is weaker in its power. They are all the expreſſed juice of the above-mentioned ed ſpecies, reduced to a ſolid conſiſtence by evaporation. Their taſte is intenſely bitter; their odour diſagreeable. They conſiſt of gum and reſin, the former being in larger quantity. The ſmell and taſte reſide principally in the gum, as do the principal virtues of the aloes.

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*Offic. Prep.*—Pil: Aloes. Pil: Al: cum Aſſafœt. Pil: Aloes cum Colocynth. P: Aloes cum Myrrh. T: Aloes S. T: Aloes Æth. T: Aloes cum Myrrh. Vin: Aloes Socc. *Ed.*—Pil: Aloes Comp. Pulv: Al: cum Canella. Pulv: Al: cum Guiac. Pulv: Aloes cum Ferro. T: Aloes C. *Lond.*

CONVOLVULUS SCAMMONIA. Scammony. *Pentan. Monoygn. Campanac. Gummi-reſina. Syria.*

SCAMMONY is a gum-reſin, obtained by cutting the root of the plant, and inſpiſſating the juice which exudes, by expoſure to the ſun and air. It is in ſmall fragments, of a blackiſh grey colour, having little ſmell, and a bitter ſubacrid taſte. It conſiſts of reſin and gum, in general nearly in equal proportions.

Scammony is one of the moſt draſtic purgatives, employed chiefly in obſtinate conſtipation. Its doſe is from 5 to 10 grains, but it is generally combined with other cathartics. It is alſo uſed as a hydragogue purgative in dropſy.

*Offic. Prep.*—Pulv: Scamm: C. *Ed.*—Pulv: Scamm: C: cum Aloe. P: Scamm: C: cum Calom. Elect: Scamm. *Lond.*

CAMBOGIA GUTTA. Gambogia. Gamboge. *Polyand. Monogyn. Tricoccæ. Gummi-reſina. Eaſt Indies.*

THIS gum-reſin is obtained by exudation, from inciſions made in the bark of the trunk of the tree. It is brittle, of a yellow colour, and has a taſte bitter and acrid. Both water and alkohol partially diſſolve it.

Gamboge is a very ſtimulating cathartic, apt in large doſes to excite vomiting, or to act with violence. Its medium doſe is from 2 to 6 grains. It is ſeldom employed but in combination with ome of the other powerful cathartics, in obſtinate conſtipation. It has alſo been uſed, however, to expel the tape-worm, and as a powerful hydragogue cathartic in dropſy.

SUB-MURIAS HYDRARGYRI. Sub-muriat, or Mild Muriat of Mercury.

THOUGH ſeveral of the preparations of mercury have a purgative operation, that of the nild muriat is moſt certain; and this preparation is even in common uſe as a cathartic. It given in a doſe of from 5 to 10 grains, its peration being quickened by the addition of n equal quantity of jalap. In more obſtinate aſes, it is combined with colocynth, ſcammony, r gamboge; and ſuch a combination affords e ſafeſt of the powerful cathartics.

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A DIVISION of Cathartics remains, intermediate in their operation between the Laxatives and Purgatives, more powerful than the one, leſs violent and ſtimulating than the other. Theſe are the Neutral Salts. They ſeem to act principally by ſtimulating the exhalant veſſels on the inner-ſurface of the inteſtines; and by the watery evacuation they occaſion, they are particularly adapted to thoſe caſes where inflammatory action or tendency to it exiſts.

SULPHAS MAGNESIÆ. Sulphat of Magneſia.

THIS ſalt, formerly known by the names of Bitter Purging Salt, and Epſom Salt, is found in mineral waters, whence it has been extracted, but at preſent is principally prepared by art, from the liquor remaining after the cryſtallization of muriat of ſoda from ſea-water, which holds a quantity of muriat of magneſia diſſolved. It is commonly in needle-like cryſtals, and deliqueſcent; but when pure, it forms large regular cryſtals, which are rather efflореſcent. They are ſoluble in nearly an equal weight of water. Their taſte is extremely bitter.

This ſalt is uſed as a purgative, in a doſe of two ounces, diſſolved in a large quantity of water. Though its taſte be bitter, it has been remarked, that it remains better on the ſtomach than many other cathartics, eſpecially when given in ſmall repeated doſes. Exhibited in this manner, it has been particularly recommended in ileus and colica pictonum.

Sulphas Sodæ, Sulphat of Soda, long known by the name of Glauber's Salt, and afterwards by that of Vitriolated Soda.—It is generally obtained from the reſiduum of the decompoſition of muriat of ſoda, by ſulphuric acid, in the preparation of muriatic acid. The ſolid reſiduum is diſſolved in water, any exceſs of acid is neutralized by the addition of a little lime, and the pure ſulphat of ſoda is obtained by evaporation. Its cryſtals are ſix-ſided priſms; they are efflоreſcent, ſoluble in three parts of cold, and in an equal part of boiling water. Its taſte is very bitter and nauſeous.

This ſalt is one of the ſaline purgatives in moſt common uſe. Its medium doſe is an ounce and a half, diſſolved in eight or twelve ounces of water.

Sulphas potassæ. Sulphat of Potaſh, formerly termed Vitriolated Tartar, prepared by the direct combination of its principles. Its taſte is bitter; it requires 17 parts of cold water for its ſolution. In a doſe of 4 or 6 drachms, it acts as a purgative; in one of 2 or 3 drachms, it is given as an aperient.

Super-tartris potassæ. Acidulous Tartarite of Potaſh, formerly Purified Tartar, Cryſtals or Cream of Tartar, (Tartarus Purificatus, Cryſtalli vel Cremor Tartari).

This ſalt is gradually depoſited from wine on keeping, and is purified by repeated ſolutions and cryſtallizations. It conſiſts of potaſh, with an exceſs of tartarous acid. Its taſte is ſour. It is ſparingly ſoluble in water. As a mild laxative, it is frequently employed. Its doſe is 4 or 6 drachms, given uſually in the form of electuary.

As a hydragogue and diuretic it is likewiſe employed in dropſy.

TARTRIS POTASSÆ. Tartarite of Potaſh.

THIS ſalt, the neutral tartarite of potaſh, formerly termed Soluble Tartar, (Tartarus Solubilis), is prepared by ſaturating the exceſs of acid in the acidulous tartarite by the addition of potaſh. It is more ſoluble in water than the other, and has a bitter taſte. It is a mild purgative. Doſe 6 drachms, or an ounce.

TARTRIS SODÆ ET POTASSÆ. Tartarite of Soda and Potaſh.

THIS ſalt, formerly known by the name of Rochelle Salt, is a triple one, being prepared by ſaturating the exceſs of acid in the acidulous tartarite of potaſh by ſoda, and conſiſting therefore of potaſh and ſoda, combined with tartarous acid. It cryſtallizes in rhomboidal priſms. Its taſte is leſs unpleaſant than that of moſt of the other ſaline purgatives, and its action is nearly the ſame. Its uſual doſe is an ounce.

PHOSPHAS SODÆ. Phoſphat of Soda.

THIS ſalt is prepared by decompoſing the phoſphat of lime obtained by burning bones to whiteneſs, by ſulphuric acid. To the ſolution of acidulous phoſphat of lime which is obtained, a ſolution of carbonat of ſoda is added, till there be a ſlight exceſs of alkali, and by evaporation the phoſphat of ſoda is cryſtallized. Its cryſtals are rhomboidal priſms. Its taſte is the leaſt nauſeous of all the ſaline purgatives, and its operation is equally mild and effectual. One ounce of it is given, diſſolved generally in a pound of tepid water, or of ſoup made without ſalt.

* * *

BESIDES the preceding Cathartics, there are ſome employed only in the form of enema.

MURIAS SODÆ. Muriat of Soda, Common Sea Salt.

FROM half an ounce to an ounce of this, diſſolved in a pound of tepid water, with the addition of an ounce of expreſſed oil, forms the common domeſtic enema.

TEREBINTHINA VENETA. Venice Turpentine.

THE reſinous juice of the Larch tree, (Pinus Larix, *Monœc. Monadelp.*), is ſometimes preſcribed under the form of enema, half an ounce of it being triturated with the yolk of an egg, and ſuſpended in a ſufficient quantity of water. Dr Cullen obſerves, that this affords a very certain cathartic, which may be employed in obſtinate conſtipation.

NICOTIANA. Tobacco, (ſee p. 133.).

THE ſmoke of tobacco, introduced into the inteſtines, has ſometimes ſucceeded in producing evacuation in colic and ileus, after other purgatives have failed. An infuſion of from 1 to 2 drachms of it in a pint of warm water is more convenient, but much caution is requiſite in the uſe of either, as tobacco, from its narcotic power, is apt to induce extreme ſickneſs and debility.

## CLASS VII.—EMMENAGOGUES.

THE medicines arranged under this claſs are thoſe capable of promoting the menſtrual diſcharge.

As the ſuppreſſion of this diſcharge is uſually owing to debility of the uterine veſſels, or want of action in them, the medicines capable of exciting it muſt be thoſe which can ſtimulate theſe veſſels.

General ſtimulants or tonics muſt have this effect to a certain extent, and there are ſeveral ſtimulants both diffuſible and permanent, employed as emmenagogues.

It is doubtful, whether there are further any medicines, which have their ſtimulant operation particularly determined to the uterine veſſels. There are ſeveral, however, which, acting on neighbouring parts, have their action extended to the uterus, and hence exert an emmenagogue power greater than can be aſcribed to any general ſtimulant operation they exert on the ſyſtem. Several cathartics act in this manner.

Under one or other of theſe diviſions, may be arranged the principal medicines employed as Emmenagogues.

# EMMENAGOGUES.

## *From the Class of Antispasmodics.*

CASTOREUM.
FERULA ASSAFOETIDA.
BUBON GALBANUM.

## *From the Class of Tonics.*

FERRUM.
HYDRARGYRUS.
CINCHONA OFFICINALIS.

## *From the Class of Cathartics.*

ALOE.
HELLEBORUS NIGER.

* * *

SINAPIS ALBA.
ROSMARINUS OFFICINALIS.
RUBIA TINCTORUM.
RUTA GRAVEOLENS.
JUNIPERUS SABINA.

* * *

Castoreum. Caſtor, formerly deſcribed under the claſs of Antiſpaſmodics, (page 143.), has been given in a doſe of 10, 15 or 20 grains in amenorrhœa; but it is a medicine of very trifling power.

Assafoetida, (p. 145.), has been given as an emmenagogue in a doſe from 5 to 20 grains. The other fœtid gums, Galbanum, Sagapenum and Ammoniacum, have been uſed with the ſame intention, but probably with no great advantage.

Ferrum, Iron, noticed under Tonics,(p. 164.), is often advantageouſly uſed as a general and permanent ſtimulant in amenorrhœa. The Carbonat of Iron, (Rubigo Ferri Præparata), is given in a doſe of 10 or 15 grains; the Sulphat of Iron in 3 or 4 grains. The Chalybeate Mineral Waters are employed with perhaps ſtill more advantage.

Hydrargyrus, (p. 156.)—Of the mercurial preparations, the Mild Muriat is employed in amenorrhœa as a general ſtimulant, in the doſe of a grain night and morning; or it is combined with the fœtid gums, or with ſome of the draſtic purgatives.

Cinchona (p. 175.) Bark, eſpecially under the form of the extract, is frequently conjoined with ſome of the preparations of iron, to furniſh an emmenagogue.

Aloes, belonging to the claſs of Cathartics, (p. 274), has been ſuppoſed to have a peculiar emmenagogue power, from the ſtimulus which it exerts on the large inteſtines being extended to the uterus. Some of the preparations of it, ſuch as the Tinctura Aloes cum Rheo, or the Pilulæ Aloes cum Myrrha, are exhibited, or it is conjoined in ſubſtance with other remedies belonging to this claſs.

Helleborus niger. Black Hellebore, (p. 269.)

This draſtic purgative has, in modern practice, been employed chiefly as an emmenagogue. It is given under the form of tincture, one drachm being given at bedtime, and continued for ſome time. Its efficacy, however, is extremely uncertain. The extract is more powerful.

SINAPIS ALBA. Muſtard. (p. 241.) *Semen.*

THE ſeeds of this plant are pungent and ſtimulating. They are generally taken unbruiſed, half an ounce being a doſe. This is not unfrequently uſed in amenorrhœa and chloroſis.

ROSMARINUS OFFICINALIS. Roſemary. *Diand. Monog. Verticillatæ. Summitates florentes.*

THE flowers and flowering tops of this plant have an aromatic flavour, with a degree of pungency, and afford by diſtillation a ſtimulating eſſential oil. It has been given under the form of infuſion in amenorrhœa, but it is now baniſhed from the preſcriptions of the phyſician.

*Offic. Prep.*—Sp: Roſm: Off. *Ed.*

RUBIA TINCTORUM. Madder. *Tetrand. Monogyn. Stellatæ. Radix. South of Europe.*

THE root of this plant is of a red colour, has a bitter taſte, with little ſmell. It has been recommended as an emmenagogue, in a doſe from 1 ſcruple to half a drachm thrice a-day. But its inefficacy is at preſent generally acknowledged.

Ruta graveolens. Ruta. Rue. *Decand. Monogyn. Multiſiliq. Herba. South of Europe.*

This herb, when recent, has a ſtrong unpleaſant ſmell, and a bitter taſte. By diſtillation it affords a pungent eſſential oil. The herb has been preſcribed as an emmenagogue in the form of the watery infuſion; and the oil is ſtill ſometimes combined with aloes, and other medicines of the ſame claſs.

*Offic. Prep.*—Extr: Rutæ Gr. *Ed.*

Juniperus sabina. Savin. *Dioecia. Monadelph. Coniferæ. Folia. South of Europe.*

The leaves of this plant have a bitter penetrating taſte, and a ſtrong unpleaſant odour. They afford a very large quantity of eſſential oil, poſſeſſing all the virtues of the plant.

Savin is a ſtrong ſtimulant, the operation of which has been ſuppoſed to be powerfully directed to the uterine ſyſtem. It has therefore been conſidered as an emmenagogue, but it is ſcarcely ever adminiſtered internally. Externally, the powder of the dried leaves is uſed as an eſcharotic.

*Offic. Prep.*—Extr: Sabinæ. T: Sab: C. *Lond.*

## CLASS VIII.—DIURETICS.

DIURETICS are thoſe medicines which increaſe the urinary diſcharge.

It is obvious that ſuch an effect will be produced by any ſubſtance capable of ſtimulating the ſecreting veſſels of the kidneys. All the ſaline diuretics ſeem to act in this manner. They are received into the circulation, and, paſſing off with the urine, ſtimulate the veſſels, and increaſe the quantity ſecreted.

There are other diuretics, the effect of which appears not to ariſe from direct application, but from an action excited in the ſtomach, and propagated by nervous communication to the ſecreting urinary veſſels. The diuretic operation of ſquill, and of ſeveral other vegetables, appears to be of this kind.

There is ſtill, perhaps, another mode in which certain ſubſtances produce a diuretic effect, that is, by promoting abſorption. When a large quantity of watery fluid is introduced into the circulating maſs, it ſtimulates the ſecreting veſſels of the kidneys, and is carried off by the urine. If, therefore, abſorption be promoted, and if a portion of ſerous fluid, perhaps previouſly effuſed, be taken up, the quantity of fluid ſecreted by the kidneys will be increaſed. In this way digitalis ſeems to act: Its diuretic effect, it has been ſaid, is greater when exhibited in dropſy than it is in health.

On the ſame principle, (the effect ariſing from ſtimulating the abſorbent ſyſtem), may probably be explained the utility of mercury in promoting the action of ſeveral diuretics.

The action of theſe remedies is promoted by drinking freely of mild diluents. It is alſo influenced by the ſtate of the ſurface of the body. If external heat be applied, diureſis is frequently prevented, and diaphoreſis produced. Hence the doſes of them ſhould be given in the courſe of the day, and the patient if poſſible be kept out of bed.

The direct effects of diuretics are ſufficiently evident. They diſcharge the watery part of the blood; and by that diſcharge they indirectly promote abſorption over the whole ſyſtem.

Dropſy is the diſeaſe in which they are principally employed, and when they can be brought to act, the diſeaſe is removed, with leſs injury to the patient than it can be by exciting any other evacuation. Their ſucceſs is very precarious, the moſt powerful often failing; and as the diſeaſe is ſo frequently connected with organic affection, even the removal of the effuſed fluid, when it takes place, only palliates without effecting a cure.

Diuretics have been likewiſe occaſionally uſed in calculous affections, in gonorrhœa, and with the view of diminiſhing plethora, or checking profuſe perſpiration.

# DIURETICS.

## *SALINE DIURETICS.*

SUPER-TARTRIS POTASSÆ.

NITRAS POTASSÆ.

MURIAS AMMONIÆ.

ACETIS POTASSÆ.

POTASSA.

## *FROM THE VEGETABLE KINGDOM.*

SCILLA MARITIMA.

DIGITALIS PURPUREA.

NICOTIANA TABACUM.

SOLANUM DULCAMARA.

LACTUCA VIROSA.

COLCHICUM AUTUMNALE.

GRATIOLA OFFICINALIS.

SPARTIUM SCOPARIUM.

JUNIPERUS COMMUNIS.

COPAIFERA OFFICINALIS.

PINUS BALSAMEA.

PINUS LARIX.

## *FROM THE ANIMAL KINGDOM.*

MELOE VESICATORIUS.

* * *

## SALINE DIURETICS.

SUPER-TARTRIS POTASSÆ, (ſee p. 280.)

ACIDULOUS tartarite of potaſh, which has been already deſcribed as a cathartic, is likewiſe to be regarded as a diuretic, and as one of hoſe moſt efficacious in the treatment of dropſy. It is given under two modes of exhibition, in which its effects are ſomewhat different. When given diſſolved in a large quantity of water, to he extent of 4 or 6 drachms in the day, it acts imply as a diuretic; when given to the ſame xtent, gradually increaſed, in the form of an lectuary, (without the free uſe of diluents), longſt with a more or leſs diuretic effect, it cts as a hydragogue cathartic. The latter is he more uſual, and, perhaps, more ſucceſsful node of exhibition.

NITRAS POTASSÆ. Nitrat of Potaſh. Nitrum. Nitre.

THIS ſalt, conſiſting of nitric acid and potaſh, s found ready formed on the ſurface of the ſoil, in warm climates. In the South of Europe, its production is accelerated by artificial arrangements. Animal and vegetable ſubſtances, in a ſtate of decompoſition, are mixed with a quantity of carbonat of lime, and expoſed to the air, but protected from the rain. After a certain period, the materials are found to contain nitrat of lime and nitrat of potaſh. Theſe ſalts are extracted by lixiviation with water: potaſh is added, by which the nitrat of lime is decompoſed, and the quantity of nitrat of potaſh increaſed; and this ſalt is purified by repeated ſolutions and cryſtallizations.

During the proceſs by which the nitrat of potaſh is formed, it appears that the azot of the animal matter combines partly with the oxygen of the atmoſpheric air, and partly with the oxygen of the animal ſubſtances. The reſulting compound, the nitric acid, is attracted in part by the lime preſent, and in part by a quantity of potaſh, which ſeems to be likewiſe formed during the proceſs.

Nitrat of potaſh is cryſtallized in hexahedral priſms. Its cryſtals are ſoluble in ſix parts of cold, and in an equal weight of boiling water.

It is decompoſed by heat, affording a large quantity of oxygen gas; and is hence an important pharmaceutic agent in oxydating bodies.

This ſalt has a cool and ſharp taſte, occaſioning a ſenſe of coldneſs in the ſtomach when ſwallowed. When given in moderate doſes, its preſence can be detected in the urine by chemical teſts. Its virtues are thoſe of a refrigerant and diuretic; and, as poſſeſſing both, it has been uſed principally to relieve ardor urinæ in gonorrhœa. The practice, however, is now exploded, from the belief that as it paſſes off by the urine, it muſt render it more ſtimulating. Its doſe is from 5 to 20 grains repeated twice or thrice a-day, with the free uſe of diluents or demulcents.

*Offic. Prep.*—Troch: Nitrat: Pot. *Ed.*—Nitr: Purif. *Lond.*

MURIAS AMMONIÆ. Muriat of Ammonia. Sal Ammoniacus Crud. Crude Sal Ammoniac.

THIS ſalt is prepared by obtaining ammonia from animal ſubſtances by diſtillation, combining it with ſulphuric acid, mixing this ſulphat of ammonia with muriat of ſoda, and expoſing the mixture to heat. A double decompoſition takes place, and the muriat of ammonia is ſublimed. From its mode of preparation it is in ſolid maſſes, ſemitranſparent, and ſomewhat ductile. It is ſoluble in about 3 parts of water at the temperature of 60°.

This ſalt may be made to act either as a diaphoretic or diuretic, according to the mode in which it is exhibited; but as an internal medicine it is ſcarcely ever preſcribed. Externally it has been uſed as a diſcutient.

ACETIS POTASSÆ. Acetite of Potaſh. Lixiva Acetata. Sal Diureticus. Tartar Regeneratum.

THIS ſalt, prepared by ſaturating potaſh with acetous acid, and evaporating the ſolution to dryneſs, has been conſidered as a powerful diuretic, and has been uſed in dropſy, half a drachm of it diſſolved in water being given every hour or two till it operate. It is uncertain in its operation however, and has therefore fallen into diſuſe.

POTASSA. Potaſh, either pure, or in the ſtate of the imperfect carbonat, is a diuretic; and by the older phyſicians the aſhes of broom, wormwood, and ſeveral other vegetables, were frequently exhibited in dropſy. Theſe, however, are merely carbonats of potaſh, more or leſs pure. The pure ſub-carbonat, therefore, is preferred to them, though as a diuretic it is little employed. Its doſe is 20 or 30 grains diſſolved in a large quantity of water, and repeated three or four times in the courſe of the day.

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## *DIURETICS FROM THE VEGETABLE KINGDOM.*

SCILLA MARITIMA. Squill. (See p. 240.).

THE root of this plant, it has already been remarked, is an emetic; in a ſmaller doſe it proves diuretic, and in dropſy is employed as one of the moſt powerful medicines of that claſs. It is given in a doſe of from 1 to 3 or 4 grains of the dried root, the doſe being gradually increaſed till it excites diureſis, or affects the ſtomach; nauſea ought however, if poſſible, to be prevented. Its diuretic power is much promoted by combination with mercury: either the corroſive, or the mild muriat of the metal, may be employed; the latter is preferred, 2 or 3 grains of it being given in the evening, and the doſes of the ſquill in the courſe of the day: or the mercury may be applied by friction in the form of ointment.

DIGITALIS PURPUREA. Foxglove. (See p. 130.).

DIGITALIS, though one of the moſt powerful narcotics, acts likewiſe as one of the moſt certain diuretics in dropſy, apparently from its power of promoting abſorption. It has frequently ſucceeded where the other diuretics have failed. It is given in ſubſtance, in the watery infuſion, or in tincture. In ſubſtance the doſe is at firſt 1 grain of the dried leaves twice a-day; and this form is perhaps preferable to any other. It excites abſorption perhaps more effectually, and has leſs tendency to excite nauſea, as it muſt act more gradually on the ſtomach.

The adminiſtration of this remedy requires to be conducted with much caution. Its effects do not immediately appear; and when the doſes are too frequent or too quickly augmented, its action is concentrated ſo as to produce frequently the moſt violent ſymptoms. The general rules, according to which it may be given, are, to begin with a ſmall doſe, with one grain, for example, of the powdered leaves twice in the twenty-four hours; to increaſe it half a grain every ſecond day, continuing this increaſe till the action of the remedy is apparent on the kidneys, ſtomach, inteſtines, or vaſcular ſyſtem; and immediately ſuſpending its exhibition, when its effects on any of theſe parts take place. When diureſis is induced, it generally continues for ſome time; and if the water ſhould not be entirely evacuated when it ceaſes, the adminiſtration of the digitalis may be cautiouſly renewed.

The ſymptoms ariſing from too large a doſe of digitalis, are, extreme ſickneſs, vertigo, indiſtinct viſion, inceſſant vomiting, and a great reduction of the force of the circulation, terminating ſometimes in ſyncope or convulſions. They are relieved by frequent and ſmall doſes of opium, by brandy, aromatics, and ſtrong bitters, and by a bliſter applied to the region of the ſtomach.

Foxglove has been ſuppoſed, from its diuretic power, to be likewiſe uſeful in epilepſy and inſania, depending on ſerous effuſion in the brain, and in aſthma, owing to effuſion in the bronchiæ; but its efficacy in theſe is probably partly owing to its narcotic power.

NICOTIANA TABACUM. Tobacco. (See p. 133.)

TOBACCO has been recommended as a diuretic in dropſy, one ounce of the dried leaves being infuſed in a pint of water, and ſix or ten drops being given, and gradually increaſed to 60 or even 100. It poſſeſſes, however, no peculiar advantage to recommend it, and its diuretic effect is generally accompanied with ſickneſs and vertigo.

SOLANUM DULCAMARA. Woody Nightſhade. Bitter-Sweet. *Pentand. Monogyn. Solanac. Stipites. Indigenous.*

THE young ſhoots or branches are the part of this plant uſed in medicine; when firſt chewed, they have a bitter taſte, which is ſoon followed by a degree of ſweetiſhneſs; their ſmell is ſtrong and diſagreeable. By drying, their activity is much impaired.

An infuſion of the dried ſtalks in water has been recommended as a diuretic in dropſy, but it is a remedy of uncertain operation, and is ſcarcely ever preſcribed.

LACTUCA VIROSA. Sweet-ſcented Lettuce. (See p. 134.).

THIS plant, though it poſſeſſes a narcotic quality, is alſo a diuretic, and has been recommended under the form of the inſpiſſated juice as a remedy in dropſy, the doſe being gradually increaſed from 5 or 10 grains to 2 or 3 drachms. It is never uſed.

COLCHICUM AUTUMNALE. Meadow Saffron. Colchicum. *Hexand. Trigyn. Liliaceæ. Radix. Indigenous.*

THE root of this plant, when recent, is extremely acrid; a very ſmall quantity occaſioning a ſenſe of burning heat in the ſtomach, ſtrangury and teneſmus; at other times, however, it is found entirely void of acrimony; differences probably owing to climate, age or ſeaſon.

ſon. It was recommended by Störck as a remedy in dropſy, under the form of oxymel or ſyrup; but from the uncertainty of its operation, it has not been eſtabliſhed in practice.

*Offic. Prep.*—Syr: Colch: A. *Ed.* Oxymel: Colch. *Lond.* Acet: Colch. *Dub.*

GRATIOLA OFFICINALIS. Hedge-Hyſſop. *Diand. Monogyn. Perſonatæ. Herba. South of Europe.*

THE leaves of this plant have a ſtrong bitter taſte, with little ſmell. They prove emetic and cathartic, but in a ſmaller doſe exert a diuretic operation, and have been recommended under the form of infuſion in the treatment of dropſy. As a remedy, however, gratiola is uncertain, and ſometimes violent in its operation.

SPARTIUM SCOPARIUM. Broom. *Diadelph. Decand. Papilionaceæ. Summitates. Indigenous.*

THE tops of the young branches of the broom have a bitter taſte, which is communicated both to water and alkohol. The watery decoction has been uſed with ſucceſs as a remedy in dropſy. It acts in general both as a cathartic and diuretic.

JUNIPERUS COMMUNIS. Juniper. *Diœcia. Monadelph. Coniferæ. Baccæ. Indigenous.*

THE berries of this ſhrub have an aromatic ſmell, and a warm ſweetiſh taſte, with a degree of bitterneſs, which depends on the incloſed ſeeds. Diſtilled with water they afford a conſiderable quantity of eſſential oil.

Juniper berries given in infuſion prove diuretic. The ſpirit of juniper, or diluted alkohol impregnated with the eſſential oil, has alſo been preſcribed as a cordial and diuretic in dropſy.

*Off. Prep.*—Spir: Junip: C: Comp. *Ed.*

COPAIFERA OFFICINALIS. Balſamum Copaibæ. Balſam of Capaiba or Copaiva. *Decand. Monogyn. Dumoſæ. Balſamum. South America.*

THIS balſam is the produce by exudation from inciſions made in the trunk of the tree. It is thick and tenacious, with a yellow tinge; has a peculiar ſmell not diſagreeable, and a pungent bitter taſte. It is ſoluble in alkohol, and in expreſſed and eſſential oils. Diſtilled with water, it affords nearly half its weight of an eſſential oil, an inſipid reſin being the reſiduum.

Balſam of copaiba increaſes the urinary diſcharge, and communicates to the urine a violet odour. In too large a doſe it excites inflammation of the urinary paſſages. From its power of ſtimulating theſe parts, it frequently proves ſucceſsful in the cure of gleet.

It has alſo been given in leucorrhœa, and in hæmorrhoidal affections. Its doſe is 20 or 30 drops twice or thrice a-day, given in the form of bolus, or, what is preferable, diffuſed in water by the medium of mucilage.

PINUS BALSAMEA. Balſamum Canadenſe. Canadian Balſam. *Monœcia. Monadelph. Coniferæ. Balſamum. North America.*

THIS balſam exudes ſpontaneouſly from the trunk of the tree. It is of a light yellow colour, tenacious, and inflammable. By keeping it becomes thicker; its ſmell is agreeable; its taſte pungent. It is ſoluble in alkohol and oils, and affords an eſſential oil by diſtillation.

The medicinal virtues of this balſam ſeem to be the ſame as thoſe of copaiba, and it is uſed for the ſame purpoſes. Its doſe is from 30 to 50 drops.

PINUS LARIX. Terebinthina Veneta. Venice Turpentine. *Monoecia. Monadelph. Coniferæ.*

THIS balſam exudes ſpontaneouſly, and in greater abundance from inciſions in the tree. It is thick and tenacious, pellucid, of a yellowiſh colour, has a peculiar ſmell, and a bitter pungent taſte. By diſtillation, with the addition of a ſmall quantity of water, to prevent the temperature from riſing too high, it affords a large quantity of an eſſential oil, (Oleum Terebinthinæ, Oil of Turpentine,) the reſiduum being a reſin nearly inſipid, (Reſina Alba vel Flava), Common, White, or Yellow Reſin.

Venice turpentine derives all its virtues from its eſſential oil, and it is this oil that is generally uſed in medicine. It is a powerful ſtimulant, directed more particularly in its action to the urinary paſſages. It has been employed in gleet, and in chronic rheumatiſm, eſpecially in that form of it termed Iſchias, in a doſe of from 5 to 12 drops, gradually increaſed, generally mixed with a quantity of honey, by which its pungency is covered. It is apt, however, to induce violent ſymptoms. Externally, it is applied as a ſtimulant to parts affected with cramp and rheumatiſm. The turpentine itſelf is ſometimes uſed internally for the ſame purpoſes as its oil. The white reſin is ſomewhat ſtimulant and diuretic; but it is only employed in the compoſition of ointments and plaſters, which it renders more adheſive, and perhaps more ſtimulating.

PISTACIA TEREBINTHINUS. Chio or Cyprus Turpentine. *Diœc. Pentand.*

THIS turpentine is rather more fragrant and grateful than the preceding; but its virtues are the ſame. The ſame obſervation may be made with reſpect to the Straſburgh Turpentine, the produce of the Pinus Picea.

The Common Turpentine, (Terebinthinus Communis), the produce of the Pinus Sylveſtris, contains leſs eſſential oil, and is more offenſive to the ſtomach than any of the other turpentines.

## DIURETICS FROM THE ANIMAL KINGDOM.

MELOE VESICATORIUS. Cantharis. Spaniſh Fly. Cantharides. *Coleoptera.*

THE Cantharis is an inſect, collected from the eaves of plants in Spain and Italy, and dried in he ſun. It is of a lively green colour; has a aint unpleaſant ſmell, and a taſte ſlightly acrid. The active matter of this inſect inflames and xcoriates the ſkin, and is uſed as the baſis of he common veſicatories. Internally adminiſtered it acts with much violence on the urinary paſſages. In dropſy, it has been given s a diuretic in a doſe of one grain once or twice -day, continued for ſome time: it has been preſcribed in a ſimilar doſe in obſtinate gleet and eucorrhœa, and in retention of urine ariſing from debility of the body of the bladder, or in he oppoſite affection of incontinence of urine from debility of the ſphincter. It is principally n theſe two latter affections, that the internal adminiſtration of cantharides is attempted.

*Offic. Prep.*—Emp: Mel: Veſ. Emp: Mel. Veſ: Comp. T: Mel: Veſ. Ung: Pulv: Mel: V. Ung: Inf: Mel: V. *Ed.*

## Class IX.—DIAPHORETICS.

Diaphoretics are thoſe medicines which increaſe the natural exhalation by the ſkin. When this is carried ſo far as to be condenſed on the ſurface, it forms Sweat; and the medicines producing it are named Sudorifics. Between Diaphoretics and Sudorifics, there is no diſtinction; the operation is in both caſes the ſame, and differs only in degree, from augmentation of doſe, or employment of aſſiſtant means.

Since diaphoreſis or ſweat is merely the increaſe of the natural exhalation, it muſt ariſe from increaſed action of the cutaneous exhalant veſſels, and the medicines belonging to this claſs muſt be thoſe which are capable of exciting that action.

Of ſtimulants capable of producing this effect, the application of heat to the ſurface affords an example. It is one of the moſt effectual,

tual, and is always employed to promote the action of ſudorifics.

The ſame effect may be produced indirectly, by increaſing the general force of the circulation, which acts as a ſtimulus on the exhalant veſſels, and increaſes their diſcharge.

By one or other of theſe modes of operation, the medicines claſſed as Diaphoretics ſeem to act.

The Saline Diaphoretics, as they do not ſenſibly augment the force of the circulation, probably act in the former manner, exerting a particular action on the ſtomach, which is communicated to the veſſels of the ſkin, or perhaps being received into the blood, and directly applied to theſe veſſels.

Thoſe diaphoretics, on the contrary, which are termed Heating, as the aromatic oils and reſins, act by directly ſtimulating the heart and arteries, and increaſing the force of the circulation.

Diaphoreſis is not, however, the neceſſary conſequence of the circulation being increaſed; for the ſurface often remains dry, where the pulſe is frequent and ſtrong. In this caſe, a morbid conſtriction of the cutaneous veſſels exiſts, which oppoſes a reſiſtance to the impetus of the blood. Whatever, therefore, relaxes theſe veſſels, will favour the production of ſweating; and to this mode of operation probably is to be aſcribed the diaphoreſis produced by antimonial preparations, or by ipecacuan, and in part the advantage derived from the uſe of warm diluents in promoting ſweat. When theſe circumſtances, the increaſe of the force of the circulation, and the relaxation of the cutaneous veſſels, are conjoined, the ſweating will be ſtill more copious; and from this probably ariſes the ſuperiority of the combination of opium with antimony or ipecacuan, to any other ſudorific.

The primary effects of diaphoretics, are to evacuate the watery part of the blood, and thus leſſen the quantity of fluid in the circulating ſyſtem; to determine the blood to the ſurface; to increaſe the action of the abſorbents, and to remove ſpaſmodic conſtriction of the cutaneous veſſels, and render the ſkin moiſt.

The firſt of theſe effects probably takes place to no great degree, as the free uſe of diluents makes part of the ſweating regimen.

The laſt effect, the changing the ſtate of the veſſels on the ſkin, is the moſt important, conſidered in a practical point of view, that diaphoretics produce, as on this their efficacy in fever, in which principally they are employed, depends.

The limits to the practice of ſweating in affections of a febrile kind, are now ſufficiently eſtabliſhed. It is attended with advantage in ſynocha, and the various phlegmaſiæ; but in fevers of the typhoid kind it is uſeleſs, and, unleſs in the very commencement of the diſeaſe, is uniformly hurtful.

As evacuating the ſerous part of the blood, and as promoting abſorption, ſudorifics have been uſed with advantage in the different ſpecies of dropſy, eſpecially in anaſarca.

By determining to the ſurface, and preſerving a gentle diaphoreſis, they are found ſerviceable in aſthma, dyſpepſia, habitual diarrhœa, chronic dyſentery, and chronic rheumatiſm, and likewiſe in a number of cutaneous diſeaſes, probably by altering the ſtate of the extreme veſſels of the ſkin.

A few circumſtances are to be attended to in the adminiſtration of ſudorifics. In inflammatory affections, if the action of the vaſcular ſyſtem is ſtrong, bleeding ſhould be previouſly uſed: during the ſweating, the free uſe of warm diluents is neceſſary; and external cold ought to be guarded againſt.

The particular diaphoretics may be arranged from the affinity in their operation, as they act by increaſing the force of the circulation, or as they operate without producing any general ſtimulant effect.

# DIAPHORETICS.

AMMONIA.

MURIAS AMMONIÆ.

ACETIS AMMONIÆ.

CITRAS AMMONIÆ.

SUB-MURIAS HYDRARGYRI.

ANTIMONIUM.

OPIUM.

CAMPHOR.

GUIACUM OFFICINALE.

DAPHNE MEZEREUM.

SMILAX SARSAPARILLA.

LAURUS SASSAFRAS.

COCHLEARIA ARMORACIA.

SALVIA OFFICINALIS.

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Of the Saline Subſtances, all thoſe that have been mentioned as diuretics, may, by the aſſiſtance of the ſweating regimen, be brought to act as Diaphoretics. Thoſe that have Ammonia for their baſe, are ſuppoſed to be ſo more powerfully. Murias Ammoniæ, Muriat of Ammonia, (page 297.), has been uſed for this purpoſe in a doſe of one drachm, diſſolved in 6 ounces of tepid water. Acetite of Ammonia, prepared by ſaturating the common diſtilled vinegar, by adding to it carbonat of ammonia, is in common uſe as a diaphoretic, one ounce of the fluid being given every hour till it operate. Very analogous in operation, and as frequently uſed, is the Citrat of Ammonia, prepared by ſaturating ammonia with lemon juice. Pure Ammonia or its Carbonat is ſtill more powerful. From 40 to 80 drops of the Aqua Ammoniæ, or from 5 to 15 grains of the carbonat, may be given, the ſudorific operation being promoted by warm diluents.

Hydrargyrus, (ſee p. 156.). — Of the preparations of mercury, the Mild Muriat, alone, or in combination with opium, has been ſuppoſed to increaſe the inſenſible perſpiration, and to this it has been ſuppoſed is owing its efficiency in certain cutaneous diſeaſes, and in chronic rheumatiſm.

Antimonium, (ſee p. 242.).—The preparations of antimony may all be exhibited ſo as to prove ſudorific. Thoſe that are in preſent uſe are, the Oxidum Antimonii cum Phoſphate Calcis, and the Tartris Potaſſæ et Antimonii. Both are employed in febrile affections; the former in a doſe from 3 to 8 grains, repeated every third or fourth hour; the latter in a doſe of one-half or one-fourth of a grain, repeated in the ſame manner, the action of both being promoted by diluents.

Ipecacuanha, (ſee p. 238.).—As the antimonial preparations prove diaphoretic in part by their nauſeating power, other emetics may be ſuppoſed to have a ſimilar effect. Ipecacuan has accordingly been given as a diaphoretic, in

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a doſe of 2 or 3 grains, repeated at intervals of one or two hours.

Opium. (See p. 117.).—Opium is juſtly regarded as a diaphoretic of conſiderable power. As it acts in a great meaſure by its ſtimulant operation, it is conſidered as dangerous in highly inflammatory diſeaſes, even when determined to the ſurface by the ſweating regimen. Its adminiſtration in ſuch caſes is rendered more ſafe, while its ſudorific power is rendered more certain, by combination with ipecacuan or antimony. The compound powder of ipecacuan, conſiſting of one part of ipecacuan, one part of opium, and eight of ſulphat of potaſh, is a very powerful ſudorific, given in a doſe from 15 to 25 grains. The combination of opium with antimony is generally made by adding 30 or 40 drops of antimonial wine to 25 or 30 drops of tincture of opium, and forming them into a draught.

Camphor. (See p. 114.).—This ſtimulant has been employed as a diaphoretic. Its power in this reſpect is increaſed by combination with opium, mild muriat of mercury, or ſome of the antimonial preparations.

GUIACUM OFFICINALE. Guaiac. *Decand. Monogyn. Gruinales. Lignum et Gummi-reſina. South America and Weſt Indies.*

THE wood of this tree, and the gum-reſin obtained by exudation from inciſions in its trunk, are the parts of it uſed in medicine.

The wood is hard and heavy, is of a yellowiſh colour, has little ſmell, and a moderately warm bitter taſte. Its virtues depend on the ſmall portion of reſinous matter which it contains.

Guaiac was introduced into practice as a remedy in the treatment of lues venerea, and was at one time conſidered capable of effecting a radical cure. Its powers are now better aſcertained. It is employed, and with ſome advantage, in promoting the action of mercury in the confirmed ſtate of the diſeaſe, and in alleviating the various ſymptoms which ariſe from a protracted mercurial courſe. It is likewiſe frequently preſcribed in cutaneous diſeaſes, in ſcrofulous affections, and in chronic rheumatiſm.

The form in which guaiac wood is adminiſtered, is always that of decoction. A quart of it is drunk in the courſe of the day. If taken warm it produces diaphoreſis.

*Offic. Prep.*—Dec: Guaiac: Off: Comp. *Ed.*

GUIACUM. Gummi-Reſina.

THIS gum-reſin exudes from inciſions made in the trunk of the guaiac tree. It is friable, of a greeniſh or greyiſh colour, has an odour ſomewhat fragrant, and a warm bitteriſh taſte. It contains about three-fourths of its weight of reſin, in which its virtues reſide. Proof-ſpirit is its proper ſolvent.

Guaiac is a ſtimulating medicine, proving diaphoretic in a doſe of about half a drachm, and purgative in a larger doſe. It is a common remedy in chronic rheumatiſm, given ſo as to excite ſweat, or in ſmaller doſes to keep up a gentle diaphoreſis. Its ſudorific power is promoted by opium or tartarized antimony. It is given either in ſubſtance in the form of bolus, or diffuſed in water by the medium of mucilage, or in tincture. The tincture of it in ſpirit it of ammonia is more ſtimulant than that in proof-ſpirit, and is generally preferred.

*Offic. Prep.*—T: Guajac. T: Guajac: Amm. *Ed.*

DAPHNE MEZEREUM. Mezereon. *Pentand. Monogyn. Veprecula. Cortex radicis. Indigenous.*

THE bark of the root of this plant is the part of it uſed in medicine: its taſte when it is chewed for ſome time is extremely acrid; its acrimony is ſomewhat impaired by drying; it is extracted by water and vinegar.

Mezereon is a ſtimulating diaphoretic, which, by determining to the ſurface, has been found of ſervice in chronic rheumatiſm, and in cutaneous diſeaſes. Its principal uſe has been in ſyphilis; as being, in particular, efficacious in removing venereal nodes, and thickening of the ligaments and perioſteum, and diſpoſing ulcerations to heal. It is given in the form of decoction, 2 drachms of the bark, with half an ounce of liquorice root, being boiled in 3 pounds of water, to 2 pounds, and 4 or 6 ounces of this being given four times a-day. It is generally combined with guaiac and ſarſaparilla. Such a combination forms the Decoctum Sarſaparillæ

Compoſitum, an improved formula for the Liſbon diet drink.

*Offic. Prep.*—Dec: Daphn: Mez. *Ed.*

SMILAX SARSAPARILLA. Sarſaparilla, *Diœcia Hexand. Sarmentac. Radix. South America.*

THIS root is in long ſlender twigs, internally white, and covered with a browniſh bark: it has ſcarcely any ſmell; its taſte is mucilaginous, and ſlightly bitter. Water extracts its bitterneſs; by beating it with water, a portion of fecula is ſeparated, white and inſipid, in which chiefly the virtues of the root appear to reſide.

Sarſaparilla, though it has been ranked by writers on the Materia Medica as a diaphoretic, can ſcarcely be ſaid to have any virtue of this kind. It is rather placed in this claſs, as being aſſociated with the medicines with which it is uſually preſcribed. It has been conſidered as a ſpecific in the treatment of ſome venereal affections, particularly thoſe of the bones or perioſteum, and as a reſtorative in that ſtate of debility which is the conſequence of the diſeaſe, or of the mercurial action. Though its virtues have been conſidered as much exaggerated, it is ſtill regarded by many practitioners as efficacious in ſuch caſes. It has alſo been recommended in extenſive ulceration, in cutaneous affections, and in chronic rheumatiſm. It is given in the form of decoction, and is very frequently joined with guaiac and mezereon.

*Offic. Prep.* — Dec: Smil: Sarſap. *Ed.*—Dec: Sarſap: Comp. *Lond.*

LAURUS SASSAFRAS. Saſſafras. *Ennead. Monogyn. Oleraceæ. Lignum. America.*

THIS wood has a moderately fragrant ſmell, and a ſweetiſh aromatic taſte. It affords an eſſential oil by diſtillation, and yields to water, by infuſion, its flavour, and part of its taſte.

Saſſafras is ſlightly ſtimulant and diaphoretic. Its infuſion has been drunk freely in cutaneous diſeaſes, and in chronic rheumatiſm. It has alſo been frequently added to decoctions of ſarſaparilla, guaiac and mezereon, but probably without communicating any real virtue.

COCHLEARIA ARMORACIA. Raphanus ruſticanus. Horſe-radiſh. *Tetradyn. Silic. Siliquoſæ. Radix. Indigenous.*

THE root of this plant when recent, has a penetrating taſte, with a degree of ſweetneſs. Its pungency reſides in an eſſential oil, and is therefore loſt by drying. Water and alkohol may be impregnated with it.

Horſe-radiſh is a ſtimulant capable of promoting perſpiration, and of acting as a diuretic and expectorant. It has been recommended in paralyſis and rheumatiſm, in aſthma and dropſy, about a drachm of the recent root cut in ſmall pieces being ſwallowed whole. It is little uſed. Externally it has been applied as a rubefacient, and its ſyrup has been uſed as a remedy for hoarſeneſs.

*Offic. Prep.*—Sp: Raphan: Comp. *Lond.*

SALVIA OFFICINALIS. Sage. *Diand. Monogyn. Verticillatæ. Folia. South of Europe.*

THE leaves of this ſhrub have an aromatic ſmell, and a warm bitteriſh taſte. Its aqueous infuſion drunk warm, has been uſed to produce ſweat, or to promote the action of ſudorifics; the aromatic quality of the ſage may perhaps add ſomething to the power of the warm diluent.

CLASS

## CLASS X.—EXPECTORANTS.

EXPECTORANTS have been defined, thoſe medicines which facilitate or promote the rejection of mucus or other fluids from the lungs and trachea. The theory of their operation is very imperfectly underſtood. It has been ſuppoſed that where a greater quantity of fluid is thrown out into the lungs than the exhalants can take up, there are remedies which may facilitate its rejection. But as expectoration is an operation partly voluntary, and dependent on the action of a number of muſcles, it is difficult to diſcover how ſuch an effect can be produced. If by expectorants be meant ſubſtances capable of producing it by ſome ſpecific action on the parts oncerned, there ſeems no reaſon to believe in he exiſtence of ſuch remedies.

Dr Cullen ſuppoſed that expectorants might ct by promoting the exhalation of a thin fluid,

which

which diluting the viſcid mucus preſent in the mucous follicles in the lungs and trachea, might facilitate its rejection. But the action of the different individuals belonging to the claſs, and eſpecially their effects in various diſeaſes, cannot be explained on this principle.

There are probably various modes of operation by which certain remedies will appear to promote expectoration, and which will give them a claim to the title of Expectorants.

Thus, in certain diſeaſes the exhalant veſſels in the lungs ſeem to be in that ſtate, by which the exhalation of fluid is leſſened, or nearly ſtopped, and in ſuch caſes expectoration muſt be diminiſhed. Any medicine capable of removing that conſtricted ſtate, will appear to promote expectoration, and will at leaſt relieve ſome of the ſymptoms of the diſeaſe. It is apparently by ſuch a mode of operation, that antimony, ipecacuan, ſquill, and ſome others, promote expectoration in pneumonia, catarrh, and aſthma, the principal diſeaſes in which expectorants are employed.

There is a caſe of an oppoſite kind, that in which there is a redundance of mucus in the lungs, as occurs in humoral aſthma, and *catarrhus ſenilis*. In theſe affections, certain expectorants are ſuppoſed to prove uſeful. If they do ſo, it is probably by being determined more particularly in their action to the pulmonary veſſels, and by their moderate ſtimulus diminiſhing the ſecretion, or increaſing the abſorption, thus leſſening the quantity of fluid, and thereby rendering the expectoration of the remainder more eaſy. The determination of theſe ſubſtances to the lungs is often perceptible by their odour in the air expired. A ſimilar diminution of fluid in the lungs may be effected by determining to the ſurface of the body, and thoſe expectorants which belong to the claſs of diaphoretics probably act in this manner.

Expectorants, then, are to be regarded, not as medicines which directly aſſiſt the rejection of a fluid already ſecreted, but rather as either increaſing the natural exhalation where it is deficient, or diminiſhing the quantity of fluid where it is too copious, either by ſtimulating the pulmonary veſſels, or by determining to the ſurface. In both caſes expectoration will appear to be promoted or facilitated.

Pneumonia, catarrh and aſthma, are the principal diſeaſes in which expectorants are employed; and the mode in which they prove uſeful will be apparent from what has been ſaid of their operation.

## EXPECTORANTS.

Antimonium.
Ipecacuanha.
Nicotiana tabacum.
Digitalis purpurea.
Scilla maritima.
Allium sativum.
Polygala senega.
Ammoniacum.
Myrrha.
Styrax benzoin.
Styrax officinale.
Toluifera balsamum.
Myroxolon peruiferum.
Amyris gileadensis.

ANTIMONIUM. (See p. 242.)—The greater number of the preparations of antimony may be uſed as expectorants, but the one commonly employed is the Tartarized Antimony. In pneumonia, catarrh, pertuſſis, and ſome forms of aſthma, it is given in a doſe of one-eighth of a grain repeated every ſecond or third hour. It is alſo frequently added to other expectorants.

IPECACUANHA.—Ipecacuan is ſimilar to antimony in its operation, and has been given in the ſame diſeaſes in a doſe of 2 or 3 grains.

DIGITALIS.—Foxglove, in a doſe of half a grain, has been employed as an expectorant in aſthma.

NICOTIANA.—Tobacco, in the form of its watery extract, has been highly recommended as an expectorant in chronic catarrh and humoral aſthma. Its doſe 1, 2, or 3 grains.

SCILLA. (ſee p. 240.)—Squill is one of the moſt powerful of the medicines claſſed as expectorants. It is conſidered as too ſtimulating to be adminiſtered where the inflammatory diatheſis is prevalent; but when that is diminiſhed, it is given with ſafety and advantage in pneumonia, in catarrh, pertuſſis and aſthma. Its doſe is one grain of the dried root, half a drachm of the ſquill vinegar, or 1 drachm of the ſyrup. Its efficacy is increaſed by combining it with tartrite of antimony, or mild muriat of mercury.

ALLIUM SATIVUM. Garlic. *Hexand. Monogyn. Liliaceæ. Radix. South of Europe.*

THE root of this plant, which is of the bulbous kind, has, when recent, a ſtrong fœtid ſmell and acrid taſte. By being long kept it becomes ſhrivelled and inert. Its taſte and ſmell are extracted by water by infuſion; by decoction they are nearly loſt. By diſtillation it affords an eſſential oil odorous and acrid.

Garlic is a ſtimulant, capable of acting as a diuretic, diaphoretic and expectorant; hence its uſe in dropſy, rheumatalgia, and humoral aſthma. Its doſe is half a drachm or 2 ſcruples. It is ſwallowed whole, or made into pills with ſoap. A ſyrup prepared by digeſting it in vinegar, and boiling the fluid with the due proportion of ſugar, has been frequently uſed as an expectorant. Externally it is applied as a ſtimulant and rubefacient.

*Offic. Prep.*—Syr: Allii. *Dub.*

POLYGALA SENEGA. Seneka. Rattleſnake-root. *Diadelph. Octand. Lomentac. Radix. North America.*

THE taſte of this root is bitter and pungent. Its active matter is extracted partially by water, completely by alkohol.

Seneka has been frequently employed as an expectorant in pneumonia, after the highly inflammatory ſtage has been ſubdued. Its doſe is from 10 to 20 grains, but it is generally uſed in the form of decoction, of which, when prepared according to the formula of the Edinburgh College, 1 ounce, or 1 ounce and a half may be given every ſecond or third hour.

*Offic. Prep.*—Dec: Polygal: Seneg. *Ed.*

AMMONIACUM. Ammoniac. *Gummi-reſina.*

THIS gum-reſin is brought from Egypt and the Eaſt Indies; the tree which produces it is unknown. It is in large maſſes, or, when of the beſt quality, in ſmall round fragments, yellow on the ſurface, and white within. It has a faint ſmell, and a nauſeous taſte. It contains nearly half its weight of reſin, which is diſſolved by alkohol. Water triturated with it forms a milky-like mixture.

Gum-ammoniac is principally employed as an expectorant, and is frequently preſcribed in aſthma and chronic catarrh. Its doſe is from 10 to 30 grains; it is given under the form of pill, or diffuſed in water, and is frequently combined with ſquill or tartrite of antimony. Externally it is applied as a diſcutient, under the form of plaſter, to white ſwelling of the knee, and to indolent tumors.

The proceſs ordered in the London Pharmacopœia for its purification, rather injures than improves it.

*Offic. Prep.* — Ammon: Purif. Emp: Amm: cum Hydr. Lac Ammon. *Lond.*

ASSAFOETIDA. (See p. 145.). — This gum-reſin is not inferior to ammoniac as an expectorant in aſthma and pertuſſis. It is given in a doſe of from 10 to 20 grains.

### MYRRHA. Myrrh. *Gummi-reſina.*

MYRRH is the produce of Arabia and Abyſſinia; the plant from which it is obtained is unknown. It is in ſmall irregular pieces of a brown colour, has a fragrant ſmell, and a warm bitter taſte. It conſiſts of gum and reſin; its virtues reſiding chiefly in the latter. Alkohol diſſolves the reſin. Water boiled on the myrrh diſſolves the gum, to which part of the reſin adheres, and this evaporated affords the watery extract.

Myrrh is an expectorant, which has been regarded as too ſtimulating to be employed in pneumonic affections, or in phthiſis, but which has been often employed in aſthma and chronic catarrh. Its doſe is from 10 to 20 grains. The watery extract which has been preferred by many phyſicians to the myrrh itſelf, ſeems to be an injudicious preparation, as the myrrh is merely weakened in power. The tincture of myrrh is in common uſe externally as a ſtimulating application to foul ulcers, and to ſpongy gums.

*Offic. Prep.*—Tinct: Myrrh. *Ed.*—P: Myrrh: C. *Lond.*

STYRAX BENZOIN. Benzoinum. Benzoin or Benjamin. *Decand. Monogyn. Bicornes. Balſamum. Eaſt Indies.*

THIS balſam, obtained by exudation, is in brittle maſſes, compoſed of brown and white fragments; its ſmell is fragrant; it has little taſte. It conſiſts almoſt wholly of reſin, and is therefore nearly entirely ſoluble in alkohol. It likewiſe contains a portion of a peculiar acid, which, as it exiſts in greater quantity in it than in any other vegetable matter, is named Acid of Benzoin. It is obtained from it by ſublimation; is in white brilliant ſcales, retains the flavour of the benzoin, and with acidity has likewiſe a degree of pungency.

Benzoin is rarely employed in medicine. Its acid is uſed as an expectorant in aſthma, in a doſe of 10 or 15 grains; but it is probably a medicine of little power. It enters into the compoſition of the ammoniated and camphorated tinctures of opium.

*Offic. Prep.*—T: Benz: C. *Ed.*

STYRAX OFFICINALE. Storax. *Decand. Monogyn. Bicornes. Balſamum. S. of Europe, Aſia.*

THIS ſubſtance is in maſſes ſoft and ſlightly unctuous, of a brown colour, has a ſtrong fragrant odour, and bitteriſh pungent taſte. It conſiſts principally of reſin, with a ſmall portion of acid of benzoin.

Storax reſembles benzoin in its virtues. It was formerly uſed as an expectorant, but is now little regarded.

TOLUIFERA BALSAMUM. Balſamum Tolutanum. Balſam of Tolu. *Decand. Monogyn. Lomentac. South America.*

TOLU balſam is obtained from inciſions in the trunk of the tree; it thickens, and in time becomes concrete; it has a fragrant odour, and a warm ſweetiſh taſte. It diſſolves entirely in alkohol, and communicates its odour and taſte to water by boiling. It contains acid of benzoin.

This is the mildeſt of all the balſams. It has been uſed as an expectorant, but its powers are very inconſiderable, and it is at preſent employed principally on account of its flavour.

*Offic. Prep.*—Syr: Toluif: Balſ. T: Toluif: B. *Ed.*

MYROXOLON PERUIFERUM. Balſamum Peruvianum. Peruvian Balſam. *Decand. Monogyn. Lomentaceæ. South America.*

THIS balſam is ſaid to be extracted by boiling the bark and young branches of the tree with water, but it is more probable, as affirmed by others, that it is obtained by exudation. It is thick and viſcid, of a reddiſh-brown colour, has a ſtrong fragrant ſmell, and a bitter pungent taſte. It affords a ſmall portion of eſſential oil by diſtillation, and of acid of benzoin by ſublimation. Its remaining matter is reſinous. It is entirely ſoluble in alkohol.

Peruvian balſam is conſiderably ſtimulant. It has been employed as an expectorant in aſthma, and as a remedy in paralyſis, chronic rheumatiſm, and leucorrhœa. Its doſe is from 5 to 15 grains.

*Offic. Prep.*—T: Balſ: Per. *Lond.*

Amyris gileadensis. Balſamum Gileadenſe. Balſam or Balm of Gilead. *Octand. Monogyn. Dumoſæ. Arabia.*

This balſam, obtained by inciſions made in the trunk of the tree, is highly fragrant, and is ſo much valued in the Eaſt, that it is ſaid not to be imported into Europe. A coarſer kind is met with, obtained by ſtrong decoction of the branches and leaves, and adulterated by various mixtures. This is of a yellow colour, and thick conſiſtence; its taſte is warm and bitter; its flavour ſomewhat fragrant. It is ſoluble in alkohol.

The medicinal virtues of the genuine balſam of Gilead have been very highly rated, undoubtedly with much exaggeration. The common balſam is ſcarcely uſed; but its qualities ſeem to be very ſimilar to thoſe of the balſam of Tolu, with perhaps more acrimony.

## Class XI.—SIALAGOGUES.

Sialagogues are ſubſtances which increaſe the quantity of the ſalivary diſcharge. This may be effected by the maſtication of certain acrid ſubſtances, or by the internal exhibition of certain medicines.

Of thoſe which act in the latter mode, *Mercury* is the only one that uniformly produces this effect. No ſatisfactory explanation has been given of this peculiar power which it exerts; and the inquiry why it ſhould be particularly directed to the ſalivary glands, appears as fruitleſs as that into the ſpecific virtue of any medicine. It does not from its ſialagogue power appear to be of advantage in the treatment of any diſeaſe; ſalivation being only a teſt of its action on the ſyſtem, but not in itſelf of any utility.

The remaining ſialagogues are thoſe which act merely by topical application by maſtication, and from their acrid ſtimulating quality. By increaſing the ſalivary diſcharge, they have been found of ſervice in toothach, and, as has been ſuppoſed, in ſome kinds of headach.

# SIALAGOGUES.

HYDRARGYRUS.
ANTHEMIS PYRETHRUM.
ARUM MACULATUM.
AMOMUM ZINGIBER.
DAPHNE MEZEREUM.
NICOTIANA TABACUM.

* * *

HYDRARGYRUS. (p. 156). Mercury.—All the preparations of this metal, when given in ſufficient quantity, excite ſalivation, accompanied with a ſenſe of heat, and ſwelling in the gums. It is an effect from which, as has juſt been obſerved, no advantage appears to be derived.

ANTHEMIS PYRETHRUM. Pellitory of Spain. *Syngeneſ. Polygam. ſuperfl. Compoſitæ. Radix. South of Europe.*

THIS root, though cultivated in this country, is generally imported from Spain. Its taſte is hot and acrid, its acrimony reſiding in a reſinous principle. It is a remedy which, from ſtimulating the ſalivary glands, and exciting a diſcharge of ſaliva, is uſed in toothach, and ſometimes gives relief. It has alſo been chewed in palſy of the muſcles of the throat.

ARUM MACULATUM. Wake-Robin. *Gynand. Polyand. Piperitæ. Radix. Indigenous.*

THE root of this plant, when recent, is extremely acrid; by drying, its acrimony is much impaired. It reſembles pellitory, and may be applied to the ſame purpoſes, but its pungency is unpleaſant. Internally, it has been uſed as a ſtimulant.

*Offic. Prep.*—Conſerv: Ari. *Lond.*

GINGER and MEZEREUM have in like manner from their acrimony been ſometimes uſed as ſialagogues. The uſe of TOBACCO for the ſame purpoſe is ſufficiently well known.

## CLASS XII.—ERRHINES.

ERRHINES are medicines which occaſion a diſcharge from the noſtrils, either of a mucous or ſerous fluid. They all operate by direct application, and generally in conſequence of a greater or leſs degree of acrimony which they poſſeſs. Their practical uſes, it is evident, muſt be very limited. By the evacuation they occaſion, it is ſuppoſed that they may diminiſh the quantity of fluid in the neighbouring veſſels; and that they hence may prove uſeful in rheumatic affections of theſe parts, in headach, pain of the ear, and ophthalmia. They are ſometimes uſed with advantage in ſome of theſe affections. It has likewiſe been imagined that they may be of uſe in preventing apoplexy.

# ERRHINES.

Iris florentina.
Æsculus hippocastanum.
Origanum majorana.
Lavandula spica.
Asarum europæum.
Veratrum album.
Nicotiana tabacum.
Euphorbia officinalis.

Sub-sulphas hydrargyri.

* * *

Iris florentina. Florentine Orris. *Triand. Monogyn. Enſatæ. Radix. South of Europe.*

The root of this plant, freed from its outer bark, is white and wrinkled, has a pleaſant odour, and ſlightly bitter taſte. It is a mild ſternutatory,

ory, and enters into the compoſition of ſome ephalic ſnuffs, principally on account of its ragrance.

ÆSCULUS HIPPOCASTANUM. Horſe-Cheſnut. *Heptand. Monogyn. Tribilatæ. Semen. Cortex.*

THE fruit of this tree is principally farinaceous. It acts as a moderate ſternatutory. The bark s bitter, and has been propoſed as a ſubſtitute for Peruvian Bark.

ORIGANUM MAJORANA. Sweet Marjoram. *Didynam. Gymnoſperm. Verticillatæ. Herba. South of Europe.*

The leaves of this herb have an aromatic odour, and, when dried and powdered, a ſlight errhine power.

LAVANDULA SPICA. Lavender. *Didynam. Gymnoſperm. Verticillat. Spicæ florentes. S. of Eur.*

LAVENDER flowers have a fragrant ſmell, and a warm bitteriſh taſte. They yield a quantity of eſſential oil, which is employed in medicine as a ſtimulant, when combined with alkohol, and other aromatics. The dried leaves in powder are ſlightly errhine.

*Off. Prep.*—Spir: Lavand: Sp. T: Lav: C. *Ed.*

NICOTIANA. Tobacco. (See p. 133).

THE powdered leaves of Tobacco are in common uſe as an errhine; the powder of its dried leaves being the baſis of the different kinds of ſnuff.

ASARUM EUROPÆUM. Aſarabacca. *Dodecand. Monogyn. Sarmentac. Folia. Indigenous.*

THE leaves of this plant poſſeſs a greater degree of errhine power than any of thoſe hitherto noticed, and are employed as the baſis of the officinal ſternutatory powders.

*Offic. Prep.*—P: Aſar: Europ: C. *Ed.*

VERATRUM ALBUM. Helleborus Albus. White Hellebore. *Polygam. Monœc. Liliaceæ. Radix. South of Europe.*

THE root of this plant has a ſtrong diſagreeable ſmell when freſh, which is loſt by drying, and an acrid taſte which is retained. Snuffed up the noſtrils in very ſmall quantity, it excites violent ſneezing, with a ſenſe of heat, and a copious diſcharge. Taken internally, in the doſe of a few grains, it acts as a violent emetic and cathartic. Externally, when mixed with lard, or in the form of decoction, it is uſed as an application in ſome cutaneous diſeaſes.

*Offic. Prep.*—T: Verat: A. *Ed.*—Dec: Helleb: Alb. *Lond.*—Ung: Helleb: A. *Dub.*

EUPHORBIA OFFICINALIS. *Dodecand. Trigynia.* *Gummi-reſina. Africa.*

THIS ſubſtance, which is of a reſinous nature, is in ſmall round fragments, having ſcarcely any ſmell, but a very acrimonious taſte. It is never given internally. Its powder is the moſt violent of all the errhines, occaſioning a copious diſcharge, with a ſenſe of heat, and even inflammation. Hence it is perhaps never employed. Externally it has been uſed as a rubefacient or veſicatory.

SUB-SULPHAS HYDRARGYRI. Sub-Sulphat of Mercury. (P. 161).

THIS preparation of mercury has been recommended as an errhine in chronic ophthalmia; one grain of it being mixed with ſix or eight grains of any mild vegetable powder, and ſnuffed up the noſtrils occaſionally.

## CLASS XIII.—EPISPASTICS AND RUBEFACIENTS.

THESE, as they operate on the ſame principles, and produce the ſame effects only in different degrees, may be conſidered merely as ſubdiviſions of one claſs.

## EPISPASTICS AND RUBEFACIENTS.

MELOE VESICATORIUS.

AMMONIA.

PIX BURGUNDICA.

SINAPIS ALBA.

ALLIUM SATIVUM.

## EPISPASTICS.

Epispastics are thoſe ſubſtances which are apable, when applied to the ſurface of the body, f producing a ſerous or puriform diſcharge, by xciting a previous ſtate of inflammation. The erm, though comprehending likewiſe iſſues and etons, is more commonly reſtricted to bliſters, —thoſe applications which, exciting inflammaion on the ſkin, occaſion a thin ſerous fluid to e poured from the exhalants, raiſe the cuticle, and form the appearance of a veſicle. This effect ariſes from their ſtrong ſtimulating power, and to this ſtimulant operation, and the pain they excite, are to be aſcribed the advantages derived from them in the treatment of diſeaſe. The evacuation they occaſion is too inconſiderable to have any effect.

It is a principle ſufficiently eſtabliſhed with regard to the living ſyſtem, that where a morbid action exiſts, it may often be removed by inducing an action of a different kind in the ſame or in a neighbouring part. On this principle is explained the utility of bliſters in local inflammation and ſpaſmodic action, and it regulates their application in pneumonia, gaſtritis, hepatitis, phrenitis, angina, rheumatiſm, colic, and ſpaſmodic affections of the ſtomach; diſeaſes in which they are employed with the moſt marked advantage.

A ſimilar principle exiſts with reſpect to pain; exciting one pain often relieves another. Hence bliſters often give relief in toothach, and ſome other painful affections.

Laſtly, bliſters, by their operation, communicate a ſtimulus to the whole ſyſtem, and raiſe the vigour of the circulation. Hence, in part, their utility in fevers of the typhoid kind, though in ſuch caſes they are uſed with ſtill more advantage to obviate or remove local inflammation.

MELOE VESICATORIUS. Cantharis. (See p. 309).

THIS is the ſubſtance employed for bliſtering. The powdered cantharides is mixed with lard and wax, ſo as to form a plaſter of a proper conſiſtence,

ſiſtence, which is applied to the part for ten or twelve hours. The veſicle is then cut, and the inflamed part dreſſed with any mild ointment.

After a bliſter has been raiſed, it is often of advantage to convert the ſerous into a purulent diſcharge, by exciting ſuppuration, or to form what is termed an Iſſue. This is done by applying to the bliſtered part any acrid ſtimulating ointment; one, for example, containing a ſmall proportion of powdered cantharides; or any foreign body, retained on the inflamed part, anſwers the ſame purpoſe by the irritation it keeps up. When by any of theſe means a puriform diſcharge is eſtabliſhed in a part, conſiderable effects ariſe from the morbid action which it excites, and the evacuation it occaſions. It is a practice often employed with advantage in aſthma, paralyſis, and a variety of chronic affections.

* * *

## RUBEFACIENTS.

Rubefacients excite pain and inflammation, but in a leſs degree than bliſters, ſo that no fluid is diſcharged. They ſtimulate the ſyſtem in general, and obviate local inflammation, and are uſed for nearly the ſame purpoſes as bliſters.

Any ſtimulating application may be uſed for this purpoſe.

Cantharides added in a ſmall proportion to a plaſter, or the Tincture of Cantharides applied by friction to a part, is often employed as a rubefacient.

Ammonia mixed with one, two, or three parts of expreſſed oil, forms a liniment frequently uſed for this purpoſe in rheumatiſm, angina, and other caſes of local inflammation.

*Offic. Prep.*—Ol: Ammon. *Ed.*

Pinus abies. Pix Burgundica. Burgundy Pitch.

*Monœcia. Monadelph. Coniferæ. Reſina.*

This ſubſtance is obtained by exudation, from inciſions in the trunk of the tree. It is boiled with a ſmall quantity of water; is ſtrained; and when cold, forms a concrete reſinous matter. This, ſpread upon leather, and applied to the ſkin, excites a ſlight degree of inflammation, and exudation of ſerous fluid. It is uſed with advantage in catarrh, pertuſſis and dyſpnœa.

*Offic. Prep.*—Emp: Pic: Burg. *Dub.*

Sinapis. Muſtard. (See page 241).—The flour of muſtard-ſeed, mixed with an equal part of wheat-flour or crumbs of bread, and made into a paſte with vinegar, forms what is termed a Sinapiſm, which acts as a powerful rubefacient. It is applied to the ſoles of the feet in typhoid fevers, where there is extreme debility, or determination to the head. It is alſo uſed in the ſame manner in comatoſe affections.

*Offic. Prep.*—Catap: Sinapeos. *Lond.*

Allium. Garlick. (See p. 330).—The bruiſed root of this plant, applied to the ſoles of the feet, produces effects ſimilar to thoſe of the ſinapiſm, and is uſed for the ſame purpoſe.

# *REMEDIES ACTING CHEMICALLY.*

## CLASS XIV.—REFRIGERANTS.

THE remedies comprized under this claſs have been uſually defined, Subſtances which directly diminiſh the force of the circulation, and reduce the heat of the body, without occaſioning any diminution of ſenſibility or nervous energy. The theories that have been delivered reſpecting their mode of operation, are obſcure or unintelligible; and even the facts which are adduced to eſtabliſh the exiſtence of ſuch remedies, are far from being concluſive.

Keeping in view the very inconſiderable action of theſe remedies, it may perhaps be poſſible, from the conſideration of the mode in which animal temperature is generated, to point out how their trivial refrigerant effects may be produced.

It has been ſufficiently eſtabliſhed, that the conſumption of oxygen in the lungs is materially influenced by the nature of the ingeſta received into the ſtomach; that it is increaſed by animal food and ſpiritous liquors, and in general by whatever ſubſtances contain a comparatively ſmall quantity of oxygen in their compoſition. But the ſuperior temperature of animals is derived from the conſumption of oxygen gas by reſpiration. An increaſe of that conſumption muſt neceſſarily, therefore, occaſion a greater evolution of caloric in the ſyſtem, and of courſe an increaſe of temperature, while a diminution in the conſumption of oxygen muſt have an oppoſite effect. If, therefore, when the temperature of the body is morbidly increaſed, ſubſtances be introduced into the ſtomach, containing a large proportion of oxygen, eſpecially in a ſtate of looſe combination, and capable of being aſſimilated by the digeſtive powers, the nutritious matter received into the blood muſt contain a larger proportion of oxygen than uſual; leſs of that principle will be conſumed in the lungs, by which means leſs caloric being evolved, the temperature of the body muſt be reduced; and this operating as a reduction of ſtimulus, will diminiſh the number and force of the contractions of the heart.

It might be ſuppoſed that any effect of this kind muſt be trivial, and it actually is ſo. It is, as Cullen has remarked, not very evident to our ſenſes, nor eaſily ſubjected to experiment, and is found only in conſequence of frequent repetitions.

The principal refrigerants are the Acids, eſpecially thoſe belonging to the vegetable kingdom. As theſe contain a large proportion of concrete oxygen in a ſtate of looſe combination, their refrigerant power may be explained on the above principle. The Neutral Salts form the remaining diviſion of refrigerants; they are much inferior in power; and what refrigerant quality they do exert, probably ariſes from the ſame cauſe. In ſome of them, it may be increaſed by the ſenſation of cold they excite in the ſtomach, which is equivalent to an abſtraction of ſtimulus.

It is obvious, that the indication to be fulfilled by the uſe of refrigerants, is the reduction of the morbidly increaſed temperature. Hence they are adminiſtered in ſynocha and other inflammatory affections, and likewiſe in fevers of the typhoid kind.

## REFRIGERANTS.

Citrus aurantium.
Citrus medica.
Tamarindus indica.
Acidum acetosum.
Super-tartris potassæ.
Nitras potassæ.
Boras sodæ.

* * *

## *ACIDS.*

All acids are ſuppoſed to be Refrigerants; but the vegetable acids are allowed to poſſeſs this power in a more eminent degree.

The native vegetable acids are found chiefly in the fruits of vegetables. The ſour juice of theſe fruits conſiſts either of the Citric or Malic Acids, or more frequently of a mixture of both. The citric acid is that which is moſt largely employed, as it forms chiefly the acid juice of the orange and lemon, the two acid fruits in common medicinal uſe.

Citrus aurantium. (Page 192). The Orange. *Succus fructûs.*

The juice of this fruit is ſour, accompanied in the variety termed the China Orange with a degree of ſweetneſs, in the Seville Orange with a ſlight bitterneſs. The former is uſed as a refrigerant in febrile affections, and as a remedy in ſcurvy.

CITRUS MEDICA. Lemonum. Lemon. (P. 193).
*Succus fructûs.*

THE juice of this fruit conſiſts of nearly pure citric acid, mixed with ſaccharine and mucilaginous matter. It is perhaps the moſt powerful of the claſs of refrigerants; it may be conſidered as a remedy nearly infallible in ſcurvy, and of late it has been uſed with apparent advantage in ſyphilis, though its anti-venereal power ſeems inferior to that of the nitric acid.

This acid is likewiſe in uſe as a refrigerant, when combined with potaſh or ammonia, forming the common ſaline mixture. It is probable, however, that by this combination its refrigerant quality is diminiſhed. When the mixture of lemon-juice with carbonat of potaſh is ſwallowed, during the effervefcence excited by their mutual action, it is found frequently effectual in checking vomiting, and is often uſed for that purpoſe; a virtue probably owing in a great meaſure to the action of the carbonic acid on the ſtomach.

TAMARINDUS INDICA. Tamarind. (See p. 262.).

THE pulp of this fruit contains a large quantity of acid, found to be principally the Tartarous; partly pure, and partly combined with potaſh, forming acidulous tartrite, mixed alſo with citric acid. A ſolution of it in water is a common cooling beverage in febrile affections.

ACIDUM ACETOSUM. Acetum. Acetous Acid. Vinegar.

THIS acid is the product of fermentation from ſolutions of ſaccharine matter, or ſweet vegetable juices, and appears to be formed by the oxygenation of the alkohol formed in the firſt ſtage of the fermentative proceſs. In common vinegar, the acid is mixed with ſaccharine and mucilaginous matter, and with a portion of tartarous acid; it is freed from theſe by diſtillation, though it remains ſtill diluted with a large portion of water. It is obtained in a purer and more concentrated ſtate, by decompoſing any of the alkaline or earthy acetites by ſulphuric acid. When the metallic acetites are decompoſed by heat, the acid is ſlightly changed in compoſition, and acetic acid formed.

As a refrigerant, vinegar has been occaſionally employed in febrile affections. It is alſo given as an antidote to the vegetable poiſons. Externally, it is uſed as an application to burns, and as a diſcutient. In pharmacy, it is employed as the ſolvent of the active matter of ſeveral vegetable ſubſtances.

*Offic. Prep.*—Acid: Acet: Diſ. Acid: Acet: Arom. Acid: Acet: Camph. Syr: Acid: Acet. *Ed.*

SUPER-TARTRIS POTASSÆ.

FROM the exceſs of acid which this ſalt contains, it poſſeſſes the virtues of a refrigerant. A ſolution of it in a large quantity of water, ſweetened with ſugar, forms a cooling beverage, uſed in febrile affections, and recommended, eſpecially in hoſpital practice, by its cheapneſs.

NITRAS POTASSÆ. Nitrat of Potaſh. Nitre. (See p. 295.).

THIS ſalt is not unfrequently uſed as a refrigerant in acute inflammatory diſeaſes. It is

given

given in a doſe of from 5 to 15 grains repeated every four or five hours. When given in larger doſes, it occaſions ſevere nauſea, and pain of the ſtomach. It is often alſo uſed in the form of gargle in the different ſpecies of cynanche, one drachm being diſſolved in ſix or eight ounces of water.

BORAS SODÆ. Borat of Soda. Borax.

THIS ſalt, conſiſting of boracic acid, united with ſoda; the ſoda being ſlightly in exceſs, is brought from Thibet, where it is found in a native ſtate. It is purified in Europe by cryſtallization; its taſte is cool; it is ſoluble in eighteen parts of cold, and ſix of hot water. It is decompoſed by ſeveral of the acids.

Borax is never uſed internally in modern practice, nor does it appear to poſſeſs any activity. Its ſolution is in common uſe as a cooling gargle; and mixed with an equal part of ſugar, it is uſed in the form of powder, to remove the aphthous cruſt from the tongue in children.

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## CLASS XV.—ANTACIDS.

ANTACIDS are remedies which obviate acidity in the ſtomach. Their action is purely chemical, as they merely combine with the acid preſent, and neutralize it. They are only palliatives, the generation of acidity being to be prevented by reſtoring the tone of the ſtomach, and its veſſels. Dyſpepſia and Diarrhœa are the diſeaſes in which they are employed.

# ANTACIDS.

POTASSA.
SODA.
AMMONIA.
CALX.
CARBONAS CALCIS.
MAGNESIA.

* * *

ALKALIES.—Theſe are ſometimes uſed to correct acidity. The ſolution of Pure Potaſh (Aqua Potaſſæ), is uſed for this purpoſe in a doſe of 15 drops; or from 5 to 15 grains of carbonat of potaſh or ſoda, diſſolved in water, are given. The ſolution of ſoda or potaſh, ſuper-ſaturated with carbonic acid, is more frequently uſed, as being more pleaſant.

Ammonia has been recommended as preferable to every other antacid, from 20 to 40 drops of the Aqua Ammoniæ being given in a cupful of water.

Aqua Calcis, Lime-water, is likewiſe uſed to orrect acidity, 6 or 8 ounces being taken occaſionally.

CARBONAS CALCIS. (P. 226.).—Of this there are two varieties medicinally employed, Creta Alba, and Lapilli Cancrorum: the former named by the Edinburgh College, Carbonas Calcis Mollior, and the latter, Carbonas Calcis Durior.

CRETA ALBA. White Chalk.—This is a carbonat of lime, found abundantly in nature; it always contains more or leſs argillaceous and ſiliceous earths. From the groſſer impurities with which it is mixed, it is freed by levigation and waſhing. It is then termed Prepared Chalk, (Creta Præparata.)

Chalk is an antacid in very common uſe. As the ſalt it forms with the acid in the ſtomach has no purgative quality, it is the one commonly employed to check diarrhœa proceeding from acidity. It is given in a doſe of 1 or 2 drachms, with the addition of a ſmall quantity of any aromatic. The chalk potion of the Edinburgh Pharmacopœia affords the beſt form for adminiſtering it.

CARBONAS CALCIS DURIOR. Cancrorum Lapilli et Chelæ. Cancer Aſtacus. Cancer Pagurus.

IN the head and ſtomach of the river crawfiſh, are found certain concretions, conſiſting of carbonat of lime, with animal matter. Theſe are prepared by levigation, and waſhing with water. They are termed Lapilli Cancrorum præparati, formerly Oculi Cancrorum præparati. The tips of the claws of the common ſea-crab, are preciſely ſimilar in compoſition, and are prepared in the ſame manner. They are named Chelæ Cancrorum præparatæ.

Both theſe ſubſtances are carbonats of lime, free from the other earths which chalk always contains, and therefore preferable to it for medicinal uſe.

MAGNESIA. Carbonas Magneſiæ. (See p. 265.)

MAGNESIA, either pure, or in the ſtate of carbona, is uſed as an antacid: the former in the doſe of 20 or 30 grains; the latter in double that quantity. The ſalt it affords, with the acid in the ſtomach, proves ſlightly purgative; and this is the only reaſon for diſtinction in practice between this earth and the carbonat of lime.

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## CLASS XVI.—LITHONTRIPTICS.

LITHONTRIPTICS are medicines ſuppoſed to e capable of diſſolving urinary calculi. Their peration is entirely chemical.

The reſearches of modern chemiſts have pro-ed, that theſe calculi in general conſiſt princi-ally of a peculiar animal acid, named the Li-nic or Uric Acid. With this ſubſtance the al-alies are capable of uniting, and of forming a luble compound; and theſe are accordingly he ſole Lithontriptics.

From the exhibition of alkaline remedies, the ymptoms ariſing from a ſtone in the bladder re very generally alleviated; and they can be iven to ſuch an extent, that the urine becomes enſibly alkaline, and is even capable of exert-ng a ſolvent power on theſe concretions. Their dminiſtration cannot, however, be continued to his extent for any conſiderable length of time, rom the ſtrong irritation they produce on the ſtomach and urinary organs. The uſe, therefore, of the alkalies as ſolvents, or lithontriptics, is now ſcarcely ever attempted; they are employed merely to prevent the increaſe of the concretion, and to palliate the painful ſymptoms, which they do, apparently by preventing the generation of lithic acid, or the ſeparation of it by the kidneys; the urine is thus rendered leſs irritating, and the ſurface of the calculus is allowed to become ſmooth.

When the alkalies are employed with this view, they are generally given ſaturated, or even ſuper-ſaturated, with carbonic acid. This renders them much leſs irritating. It at the ſame time diminiſhes, indeed, their ſolvent power; for the alkaline carbonats exert no action on the urinary calculi: But they are ſtill equally capable of correcting that acidity in the *primæ viæ*, which is the cauſe of the depoſition of the lithic acid from the urine, and therefore ſerve equally to palliate the diſeaſe. And when their acrimony is thus leſſened, their uſe can be continued for any length of time.

# LITHONTRIPTICS.

POTASSA.
CARBONAS POTASSÆ.
SODA.
CARBONAS SODÆ.
SAPO ALBUS.
CALX.

* * *

POTASSA. Potaſh.

THIS alkali is obtained from the incineration of the woody parts of vegetables. The aſhes are waſhed with water; the potaſh partly combined with carbonic acid, and ſmaller portions of neutral ſalts are ſeparated from the carbonaceous matter; and the dry maſs obtained by evaporation of this ſolution, is the Potaſh of commerce. The ſub-carbonat of potaſh is obtained pure from this by ſolution and evaporation; and the pure potaſh by adding lime to the ſub-carbonat, to abſtract its carbonic acid.

The ſolution of potaſh, the Aqua Potaſſæ of the Edinburgh Pharmacopœia, may be given as a lithontriptic, or ſolvent of urinary calculus, in a doſe of 15 or 20 drops morning and evening, increaſing it gradually as far as the ſtomach can bear. It is rendered leſs irritating when given in a large quantity of ſome gelatinous or mucilaginous liquor; but even with any management it cannot be long continued in a large doſe, and therefore it is now ſeldom uſed.

The form under which this alkali is generally uſed, is the ſolution ſuper-ſaturated with carbonic acid. Taken regularly to the extent of 1 or 2 pounds in the day, it relieves the painful ſymptoms which calculus produces.

*Offic. Prep.*—Aq: Super-Carb: Potaſs. Aq: Potaſs. *Ed.*

Soda. — This alkali is obtained from the combuſtion of a number of ſea-plants. The aſhes ſemivitrified by the heat, form the Barilla of commerce, from which the carbonat of ſoda is extracted by ſolution in water and cryſtallization. Its cryſtals contain half their weight of water of cryſtallization, and are ſoluble in two parts of cold, and in an equal part of boiling water.

As a lithontriptic, or rather as a palliative in calculus, ſoda is given in the form of the watery ſolution, ſuper-ſaturated with carbonic acid. Of this from 1 to 2 pounds are taken daily.

Another form in which the carbonat of ſoda is given, is that of pill. The cryſtals are expoſed to a very gentle heat, till they loſe their water of cryſtallization, and the dry powder obtained is made into pills with ſoap. Of theſe half a drachm or a drachm are taken in the courſe of the day.

*Offic. Prep.*—Aq: Super-Carb: Sodæ. *Ed.*

Sapo albus.—Soap is a form under which the fixed alkalies have been adminiſtered in calculous affections. It is a chemical combination of expreſſed oil with potaſh or ſoda. In the purer ſoaps, ſoda is employed, with the mildeſt vegetable expreſſed oils. It is white, but ſometimes deſignedly coloured, by the addition to the ſoap, while fluid, of a ſolution of ſulphat of iron.

The acrimony of the alkali is much diminiſhed by its combination with the oil, and on this account ſoap has been preferred as a lithontriptic, one or two ounces being taken in the courſe of the day. From the oil it contains, it is nauſeous, and in ſuch large doſes generally offenſive to the ſtomach.

Calx.—Lime in the form of lime-water, has been uſed in calculus, in the quantity of a quart or more daily; and it may prove uſeful by correcting acidity.

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Bitters and aſtringents have been found of ſervice in calculous caſes, evidently by reſtoring the tone of the ſtomach, and thus preventing the generation of acid. But they cannot be conſidered as Lithontriptics.

ES-

## CLASS XVII.—ESCHAROTICS.

ESCHAROTICS are ſubſtances capable of diſſolving animal matter; applied to the ſkin, they erode it, and to an ulcer, they remove its ſurface. They are employed to conſume excreſcences, to open an ulcer, and to change the diſeaſed ſurface of a ſore already exiſting. Their action is entirely chemical.

### ESCHAROTICS.

ACIDA MINERALIA.
POTASSA.
NITRAS ARGENTI.
MURIAS ANTIMONII.
SULPHAS CUPRI.
ACETIS CUPRI.
MURIAS HYDRARGYRI.
SUB-NITRAS HYDRARGYRI.
OXIDUM ARSENICI ALBUM.
JUNIPERUS SABINA.

THE

THE MINERAL ACIDS act rapidly as Eſcharotics, but from being fluid they can ſeldom be conveniently applied.

POTASSA. (See p. 367.)—Pure Potaſh, in its ſolid ſtate, forms a powerful eſcharotic; mixed with a quantity of lime, it becomes rather milder. The one was formerly termed Cauſticum Commune Acerrimum; the other, Cauſticum Commune Mitius. Either of them is made into a paſte with ſoap, and applied to the part.

NITRAS ARGENTI. Cauſticum Lunare.—Nitrat of Silver, fuſed and run into moulds, forms the cauſtic which is moſt frequently employed. It is merely moiſtened, and the part intended to be eroded, touched with it.

MURIAS ANTIMONII.—This is a cauſtic which has been uſed, but it is inconvenient from being in the fluid form, from which it cannot be confined to the part.

SULPHAS CUPRI.—This ſalt is a mild eſcharotic, and ſolutions of it are frequently uſed for the general purpoſes to which eſcharotics are applied.

Acetis cupri. Acetite of Copper. Ærugo Æris. Verdigriſe.

In its eſcharotic power, the acetite of copper is ſtill milder, than the ſulphat.

Murias hydrargyri corrosivus. Corroſive Muriat of Mercury.

This preparation of Mercury is frequently employed as an eſcharotic. Its ſolution in water, in the proportion of one grain to the ounce, is in particular applied to venereal ulcers.

Sub-nitras hydrargyri. Sub-nitrat of Mercury.

This is employed with the ſame intention as the preceding. It is ſprinkled on the part in powder, or is applied mixed with lard in the form of ointment.

Oxidum arsenici album. (See p. 168.).

White oxyd of arſenic has been frequently employed as an external application to cancer, and acts in part at leaſt by its eſcharotic power. It was firſt introduced as an empirical remedy, and was applied ,mixed with ſeveral vegetable

powders,

powders, and made into a paſte with the yolk of an egg. By ſurgeons it is generally uſed in the form of ſolution, 10 grains being diſſolved in one ounce of water, and this ſolution applied by a pencil to the ſore. It not unfrequently amends the diſcharge, cauſes the ſore to contract in ſize, and caſes have even been related of its having effected a cure. Violent pain is ſometimes produced by its application; and in ſome caſes, from its continuance, the general ſyſtem appears to be affected. It requires, therefore, to be uſed with caution.

JUNIPERUS SABINA. Savine. (See p. 290.).

THE powdered leaves of ſavine poſſeſs an acrid power, whence they are employed as eſcharotic. The powder ſprinkled on warts or excreſcences removes them, or made into an ointment with lard, is uſed as an application to old ulcers, and to ſome obſtinate cutaneous affections.

RE-

# *REMEDIES ACTING MECHANICALLY.*

## CLASS XVIII.—ANTHELMINTICS.

ANTHELMINTICS are thoſe medicines uſed to expel worms from the inteſtinal canal. The greater number of them act mechanically, diſlodging the worms, by the ſharpneſs or roughneſs of their particles, or by their cathartic operation. Some ſeem to have no other qualities than thoſe of powerful bitters, by which they either prove noxious to theſe animals, or remove that debility of the digeſtive organs, by which the food is not properly aſſimilated, or the ſecreted fluids poured into the inteſtines are not properly prepared; circumſtances from which it has been ſuppoſed the generation of worms may ariſe.

## ANTHELMINTICS.

Dolichos pruriens.
Ferri limatura.
Stannnum pulveratum.
Olea Europæa.
Artemisia santonica.
Spigelia marilandica.
Polypodium filix mas.
Tanacetum vulgare.
Geoffræa inermis.
Cambogia gutta.
Sub-murias hydrargyri.

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Dolichos pruriens. Cowhage. *Diadelph. Decand. Papilionaceæ. Pubes leguminis rigida. Eaſt and Weſt Indies.*

The down of the pods of this plant, conſiſting of very ſharp ſpiculæ, is the part uſed as an anthelmintic,

anthelmintic. It is made into an electuary, with ſyrup or molaſſes, of which two tea-ſpoonfuls are given to an adult, and repeated two or three times, a cathartic being afterwards exhibited. Its action is entirely mechanical.

FERRUM. Iron.—The filings of this metal have been given as an anthelmintic, in a doſe of one or two drachms. The ruſt of iron has likewiſe been recommended, particularly as a remedy againſt the tænia, when taken to the extent of three or four drachms.

STANNUM. Tin.—Tin is reduced to a powder, conſiſting of ſmall rounded particles, by heating it nearly to its melting point, and agitating it briſkly. This powder is uſed as an anthelmintic, in a doſe of one or two drachms, or even in a much larger quantity. It is taken repeatedly in the morning, and a cathartic is afterwards exhibited. Its effect is mechanical.

OLEA EUROPÆA. Olive Oil. Oleum Olivarum.
*Diand. Monogyn. Sepiariæ. Oleum expreſſum.*
*South of Europe.*

OLIVE Oil, or any other expreſſed oil, taken in the morning to the extent of half-a-pound, or as much as the ſtomach can bear, has been found ſerviceable as an anthelmintic.

ARTEMISIA SANTONICA. Wormſeed. *Syngen. Polygam. ſuperfl. Compoſitæ. Semen. Perſia.*

THE ſeeds of this plant have a faint diſagreeable ſmell, and a very bitter taſte. They are employed as an anthelmintic; the doſe half a drachm, or a drachm of the powder to an adult. This, after being continued for ſome time, is followed by a doſe of a cathartic.

SPIGELIA MARILANDICA. Caryophyllus Indicus. Indian Pink. *Pentand. Monogyn. Stellatæ. Radix. North America.*

THE root and ſtalks of this plant are uſed in medicine; they have a bitter taſte; in a large doſe prove purgative, and in a ſtill larger narcotic.

The ſpigelia is uſed as an anthelmintic, in the form of the watery infuſion; in the quantity of half a drachm, or even to the extent of two or three drachms to an adult. A purgative is given after it.

POLYPODIUM FILIX MAS. Male Fern. *Cryptogamia. Filices. Radix. Indigenous.*

THE root of this plant has been employed as an anthelmintic, eſpecially as a remedy againſt the tænia; two or three drachms of the powder of it being taken in the morning, and a ſtrong cathartic of jalap or gamboge given ſoon after it. It is now ſeldom uſed.

TANACETUM VULGARE. Tanſy. *Syngen. Polyg. ſuperf. Compoſitæ. Folia & flores. Indigenous.*

THE leaves and flowers of this plant have a ſtrong bitter taſte, with ſome aromatic quality. They have been recommended as anthelmintic, and eſpecially as capable of expelling the lumbrici. The doſe, in powder, is from one ſcruple to one drachm. They are little uſed.

GEOFFRÆA INERMIS. Cabbage-Bark tree. *Diadelph. Decand. Papilionac. Cortex. Jamaica.*

THE bark of this tree has an unpleaſant ſmell, with a ſweetiſh taſte. It is uſed as a powerful anthelmintic, under the form of decoction. Its doſe in ſubſtance is thirty grains, and it generally ly operates as a cathartic as well as anthelmintic. Some caution is requiſite in its uſe, not to [illegible]er-doſe it; it is likewiſe neceſſary, to avoid drinking cold water during its operation, this inducing ſickneſs and vomiting.

*Offic. Prep.*—Decoct: Geoffr: In. *Ed.*

CAMBOGIA. (See p. 276).—Gamboge has been juſtly celebrated as a remedy againſt the tape-worm. It is given in a doſe from 5 to 20 grains by itſelf, or combined with two parts of acidulous tartrite of potaſh.

SUB-MURIAS HYDRARGYRI.—Several of the preparations of mercury have been uſed for their anthelmintic power; this is entitled to the preference. It is given by itſelf, in a doſe of 10 or 12 grains to an adult, or in a ſmaller quantity, combined with jalap or rhubarb. It is alſo generally the baſis of the cathartic uſually adminiſtered after other anthelmintics have been continued for ſome time.

CLASS

## CLASS XIX.—DEMULCENTS.

DEMULCENTS are defined, " Medicines ſuited to obviate and prevent the action of acrid and ſtimulant matters, and that not by correcting or changing their acrimony, but by involving it in a mild and viſcid matter, which prevents it from acting upon the ſenſible parts of our bodies," or by covering the ſurface expoſed to their action.

Where theſe ſubſtances are directly applied to the parts affected, it is eaſy to perceive how benefit may be derived from their application. But where they are received by the medium of the ſtomach into the circulating ſyſtem, it has been ſuppoſed that they can be of no utility, as they muſt loſe that viſcidity on which their lubricating quality depends. Hence it has been concluded, that they can be of no ſervice in gonorrhœa, and ſome ſimilar affections. It is certain, however, that many ſubſtances which undergo the proceſs of digeſtion are afterwards ſeparated in their entire ſtate from the blood, by particular ſecreting organs, eſpecially by the kidneys; and it is poſſible that mucilaginous ſubſtances, which are the principal demulcents, may be ſeparated in this manner. There can be no doubt, however, but that a great ſhare of the relief demulcents afford in irritation or inflammation of the urinary paſſages, is owing to the large quantity of water in which they are diffuſed, by which the urine is rendered leſs ſtimulating from dilution. In general, demulcents may be conſidered merely as ſubſtances leſs ſtimulating than the fluids uſually applied.

Catarrh, diarrhœa, dyſentery, calculus, and gonorrhœa, are the diſeaſes in which demulcents are employed. As they are medicines of no great power, they may be taken in as large quantities as the ſtomach can bear.

The particular demulcents may be reduced to the two ſubdiviſions of Mucilages and Expreſſed Oils.

# DEMULCENTS.

Mimosa nilotica.
Astragalus tragacantha.
Linum usitatissimum.
Althæa officinalis.
Malva sylvestris.
Glycyrrhiza glabra.
Cycas circinalis.
Orchis mascula.
Maranta arundinacea.
Triticum hybernum.
Ichthyocolla.
Olea europæa.
Amygdalus communis.
Sevum ceti.
Cera.

* * *

MIMOSA NILOTICA. Arabicum Gummi. Gum Arabic. *Polygam. Monœc. Lomentac. Gummi. Africa.*

THIS, the pureſt of the gums, is obtained by ſpontaneous exudation from the plant. It is in ſmall irregular pieces, white or yellowiſh, ſemipellucid, without taſte or ſmell. It has all the properties of gum; is inſoluble in alkohol or oils, and ſoluble in water, forming a viſcid ſolution termed Mucilage.

Gum Arabic is uſed as a demulcent. In catarrh it is allowed to diſſolve ſlowly in the mouth, and its mucilage is the baſis of the mixtures uſually employed to allay coughing. Its ſolution in water, more or leſs viſcid, is likewiſe uſed in teneſmus, ſtrangury, and *ardor urinæ.*

In pharmacy, mucilage of Gum Arabic is employed for a variety of purpoſes. It ſerves to ſuſpend heavy powders in waters; it gives tenacity to ſubſtances made into pills, and it effects a partial union of oils, balſams, and reſins with water.

*Offic. Prep.*—Emulſ: Gum: Mim: Nil. Muc: Gum: Mim: Nil. *Ed.*

ASTRAGALUS TRAGACANTHA. Tragacanth. *Diadelph. Decand. Papilionaceæ. Gummi. South of Europe, Aſia.*

TRAGACANTH is obtained by exudation; it is in ſmall wrinkled pieces, ſemitranſparent and brittle; has neither taſte nor ſmell, and is entirely a pure gum. It is greatly ſuperior to all the gums, in giving viſcidity to water; its power in this reſpect being to that of gum Arabic as 1 to 24. Its ſolution is not perfectly uniform, unleſs it be boiled for ſome time.

Tragacanth has virtues ſimilar to gum Arabic. It is leſs employed, except in ſome pharmaceutical proceſſes, in which, from its greater viſcidity, it is preferred, as in making of troches.

*Offic. Prep.*—Mucil: Aſtrag: Trag. *Ed.*—P: Trag: C. *Lond.*

LINUM USITATISSIMUM. Flax. *Pentand. Pentagyn. Gruinales. Semen. Indigenous.*

THE ſeeds of this plant afford a mucilage by infuſion or decoction in water, which has no unpleaſant taſte or ſmell. Theſe preparations of it are, therefore, frequently uſed as demulcents in catarrh and gonorrhœa.

ALTHÆA OFFICINALIS. Althæa. Marſh-mallow. *Monadelph. Polyand. Columniferæ. Radix. Indigenous.*

ALL the parts of this plant yield a mucilage by infuſion or decoction in water, the root moſt abundantly. This mucilage is ſimilar to that from lint-ſeed, and is uſed for the ſame purpoſes.

*Offic. Prep.*—Decoct: Alth: Off. Syr: Alth: Off. *Ed.*

MALVA SYLVESTRIS. Common Mallow. *Monadelph. Polyand. Columniferæ. Folia. Indig.*

THE leaves of this plant afford a mucilage by infuſion in water, much weaker, however, than that from lint-ſeed or althæa. The plant is therefore ſcarcely uſed.

GLYCYRRHIZA GLABRA. Liquorice. *Diadelph. Decand. Papilionac. Radix. South of Europe.*

THE root of this plant has a ſweet agreeable taſte, with no flavour. This ſweetneſs is extracted l by water by infuſion or decoction; and by vaporation a dark-coloured extract of the ſame weet taſte is obtained, conſiſting principally of accharine and mucilaginous matter. Alkohol ikewiſe extracts the ſweetneſs of liquorice.

Liquorice-root is a pleaſant demulcent, which s frequently added to infuſions of lintſeed, or lthæa. Its watery extract is alſo in common ſe as a demulcent in catarrh.

*Offic. Prep.*—Extr: Glycyrrh: Gl. Troch: Glycyrrh. Troch: Glycyrrh: cum Opio. *Ed.*

CYCAS CIRCINALIS. Sago. *Cryptogamia. Filices. Eaſt Indies.*

THIS is a fecula obtained from the pith or medullary part of the branches of the plant. It is in ſmall grains, without taſte or ſmell. Boiled in milk or water, it forms a nutritious jelly, often preſcribed in diarrhœa as a demulcent, and in convaleſcence as a nutritious article of diet, eaſy of digeſtion.

ORCHIS MASCULA. Salop. *Gynand. Diand. Orchideæ. Indigenous.*

SALOP is a fecula obtained from the root of the orchis. Its qualities and virtues are ſimilar to thoſe of Sago.

MARANTA ARUNDINACEA. *Monand. Monogyn. Scitamineæ. South America.*

THE fecula of this plant has been lately introduced under the name of Arrow-Root Powder, as a demulcent, uſeful in diarrhœa and dyſentery, and as a nutritious article of diet for convaleſcents. It forms a jelly by boiling with water or milk.

TRITICUM HYBERNUM. Wheat. *Triand. Digyn. Gramina. Fecula ſeminum. Amylum.*

STARCH, the fecula of wheat, forms a gelatinous ſolution when boiled with water, which is uſed as a demulcent. It is thus given as an enema in teneſmus, and is the common vehicle for giving opium in that form. Starch troches are re likewiſe ordered in the London Pharmacoœia, and uſed as demulcent in catarrh.

*Offic. Prep.* — Muc: Amyli. *Ed.* — Troch: Amyli. *Lond.*

**CORNU CERVI RASURA.** Hartſhorn Shavings.
Cervus Elaphus. Cornu. *Mammal. Pecora.*

THE ſhavings of the horns of the deer, freed from their outer rough covering, contain, alongſt with the phoſphat of lime, a quantity of animal gelatin. This is extracted by decoction in water, and a jelly is thus obtained, which in diarrhœa and dyſentery is ordered as a demulcent.

**ICHTHYOCOLLA.** Iſinglaſs. Acipenſer Sturio.
*Piſces. Chondropterygii.*

ISINGLASS is obtained from the ſkin and other parts of the above, and ſeveral other kinds of fiſh, caught in the Northern Seas. The ſkin is boiled in water, and the ſtrained decoction afterwards inſpiſſated. The iſinglaſs thus obtained is in dry pieces, which are again ſoluble in water, forming a thick mucilage, which has ſometimes been employed as a demulcent.

OLEA EUROPÆA. (p. 377.)—The oil obtained from the fruit of the olive by expreſſion, is of a light yellowiſh or greeniſh colour, without either taſte or ſmell.

This is the expreſſed oil, which is moſt commonly uſed in medicine. It is employed as a demulcent in catarrh, and ſome other affections. It is diffuſed in water by the medium of mucilage, or by a very ſmall quantity of one of the alkalies, and is thus taken in as large quantities as the ſtomach can bear.

AMYGDALUS COMMUNIS. *Icoſ. Monog. Pomaceæ. Semen; Nucleus; Ol. Expreſſ. S. of Europe.*

THIS oil is obtained by expreſſion from the ſeeds, or by decoction of them in water. It is very ſimilar to the olive oil, perhaps rather purer, and is uſed for the ſame purpoſes.

There is another mode in which this oil is given as a demulcent, that of emulſion. The almonds are triturated with water; the oil they contain is diffuſed in the water, by the medium of the mucilage and fecula of the almond, and a milky-like liquor is formed, which is extenſively uſed as a pleaſant demulcent.

Sevum ceti. Spermaceti. Phyſeter Macrocephalus. *Mammalia. Cetacea.*

This fatty matter is obtained from the head of the particular ſpecies of whale above ſtated. It is purified by melting and boiling with an alkaline ſolution. It is then in white flakes, is unctuous and friable, and has neither taſte nor ſmell. Its chemical properties are the ſame as thoſe of the expreſſed oils and fats, except that it does not eaſily unite with the alkalies. Its medicinal virtues are thoſe of a mild demulcent, and as ſuch it is given in catarrh and gonorrhœa, mixed with ſugar, or diffuſed in water by the medium of the yolk of an egg.

*Offic. Prep.*—Cerat: Sperm: Ceti. *Lond.*

Cera. Wax.—This is a concrete ſubſtance of a particular nature, collected from the antheræ of vegetables by the bee. In its chemical properties it reſembles moſt nearly the expreſſed oils, and in compoſition differs from them in containing a larger proportion of carbon. It is of a yellow colour, but by bleaching can be rendered white.

Wax has been uſed as a demulcent in dyſentery, being diffuſed in water by means of mucilage of gum Arabic, but it has no particular quality to recommend it. It is much uſed in the compoſition of ointments and plaſters.

*Offic. Prep.*—Emp: Ceræ. *Ed.*

## CLASS XX.—DILUENTS.

DILUENTS are defined, thoſe ſubſtances which increaſe the proportion of fluid in the blood. It is evident that this muſt be done by watery liquors. Water is indeed, properly ſpeaking, the only diluent. Various additions are made to it, to render it pleaſant, and frequently to give it a ſlightly demulcent quality. But theſe are not ſufficiently important to require to be noticed, or to be claſſed as medicines.

Diluents are merely ſecondary remedies. They are given in acute inflammatory diſeaſes, to leſſen the ſtimulant quality of the blood. They are uſed to promote the action of diuretics in dropſy, and to favour the operation of ſweating.

## CLASS XXI.—EMOLLIENTS.

EMOLLIENTS are thoſe medicines, according to the definition of Dr Cullen, which diminiſh the force of coheſion in the particles of the ſolid matter of the human body, and thereby render them more lax and flexible. Their operation is mechanical; they are inſinuated into the matter of the ſolid fibre, and leſſen the friction between its particles. They are uſeful when the fibres are rigid, or when they are much extended, and therefore afford relief when topically applied to inflamed parts, to tumors diſtending the ſkin, or where the ſkin is dry and rigid.

Heat conjoined with moiſture is the principal emollient; and water applied warm by the medium of ſome vegetable ſubſtances, conſtituting the various fomentations and cataplaſms, is the form under which it is applied, the vegetable matter ſerving to retain the heat, and to allow the proper application of the moiſture.

Oils and unctuous ſubſtances are the only other emollients; they are merely introduced by friction. Any of the expreſſed oils already noticed, or Lard, (Axungia Porcina), may be uſed for this purpoſe.

END OF VOLUME FIRST.